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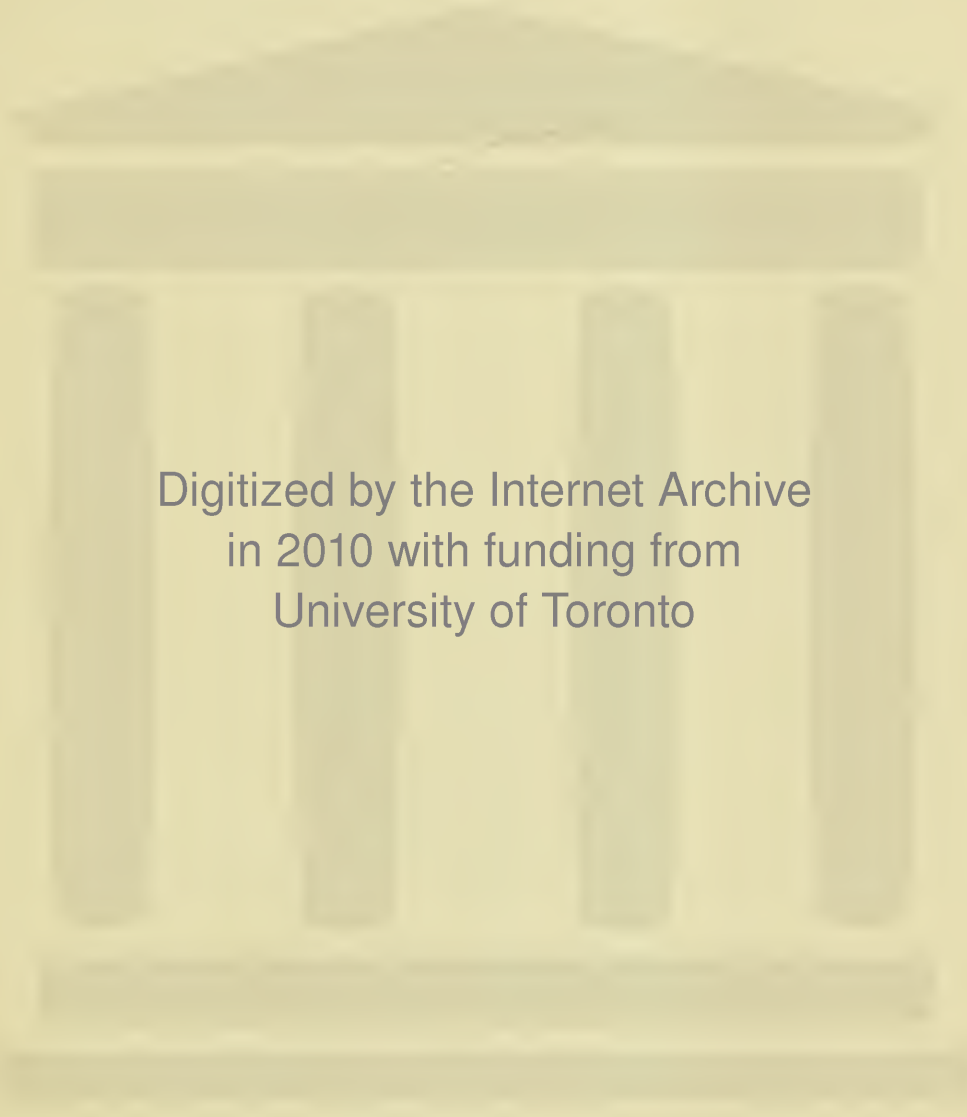
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THE

Montreal Medical Journal

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ON SO-CALLED DOUBLING OF THE PUNCTA LACRIMALIA.

BY

FREDERICK T. TOOKE, B.A., M.D.,

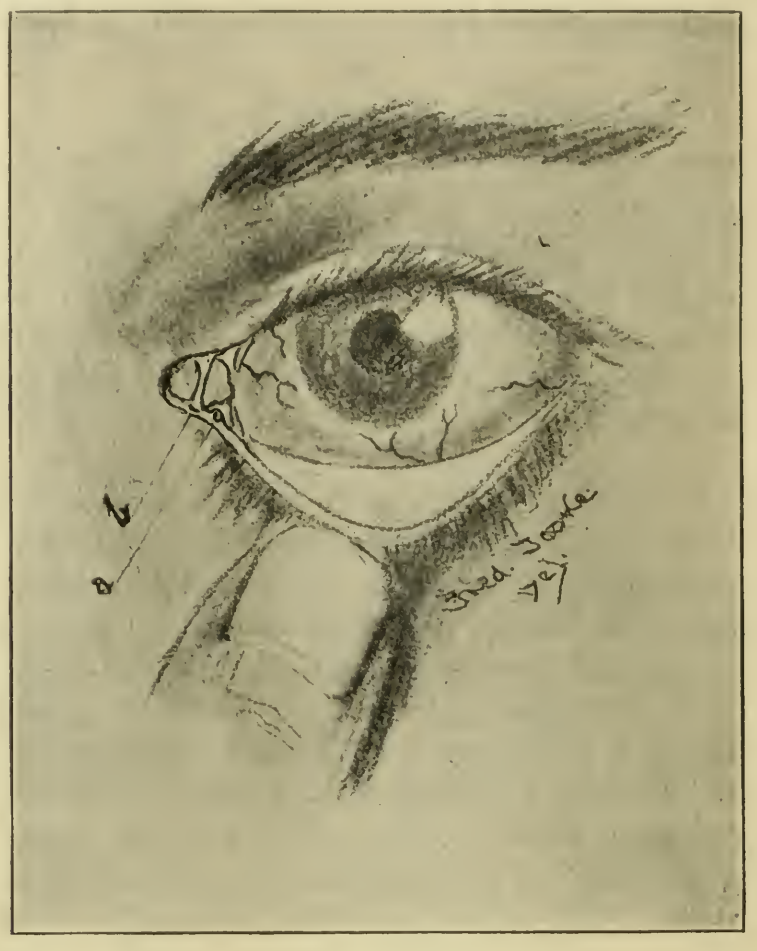
Assistant Ophthalmologist, Royal Victoria Hospital, Montreal.

The conditions about to be described in two rather unusual cases were found as the result of a routine ocular examination; their existence not being in any way anticipated, the element of a happy chance must be taken into consideration in their discovery. The points of similarity, as well as one or two of difference, make these cases interesting, and throw perhaps a little light on an obscure form of a congenital anomaly.

Case 1. R. R., a young man of 23 years, a painter by trade, came under my care at the Outpatient Department at the Royal Victoria Hospital, complaining of headaches and watering of the eye. He had never suffered from what is commonly known as "sore eyes," and no ocular discharge had ever been observed. He was diagnosed as asthenopic, refracted under mydriasis, and correcting glasses were prescribed. Epiphora persisting in the left eye, although his glasses had relieved his headaches, I determined to explore the lacrymal channels. While employing a Meyer's syringe, which was quite easily inserted, a tiny stream of water was emitted at a point about three mm. internal to the punctum. This orifice was on the lid margin in the same line as the punctum, the two connecting through the same canaliculus, the point of the syringe being passed from one through to the other. This second opening, however, differed, in that it appeared more like a tiny horizontal slit as though made with the tip of a cataract knife, the lips being in close apposition, and in no way everted or elevated, as one frequently finds to be the case with the punctum. A second point of interest was shown in this patient in the form of a musculofibrous band which extended from the point of this second orifice over the middle of the caruncle, to which it was adherent, to a corresponding point on the margin of the upper lid, constituting what we understand as a congenital symblepharon, a very unusual occurrence. By introducing the syringe and stilettes inward through the second opening, I found

that a blockage had occurred where the canaliculus merges into the fundus of the sac. There was no doubling in the upper canaliculus or in either canaliculi of the right eye.

I brought the patient to my consulting room, where I attempted this sketch (Fig. 1), which may possibly bring out some of my points. The condition was not interfered with.



I.—(a) Original punctum, round and slightly everted; (b) slit-like accessory opening, a cleft or fissure in canaliculus at root of band constituting congenital symblepharon.

Case 2. B. F., aged 48, an agent, was seen by me in private. When removing a small piece of conjunctival mucus for microscopic examination my attention was attracted to two openings at the right lower lid margin near the canthus. The patient was of more than average intelligence and told me that he had noticed this anomaly before. The feature of particular interest in this case is that what we have been regarding as the secondary or accessory opening, appearing as a tiny slit, was this time outside what I had accepted as the punctum. This opening, practically the same size as that described in the former case,

passed into a common canaliculus, which, with the sac and nasal duct, was found to be patent, fluid passing readily into the nose. On being questioned, like the other patient, he told me that he had never suffered from any severe inflammation of the eyes or tear passages, nor had he even been inconvenienced from watering of the eyes.

For purposes of demonstration I passed a fine needle, threaded with a horse-hair suture, through the two openings. There was no doubling of the puncta in the upper lid or in the left eye.

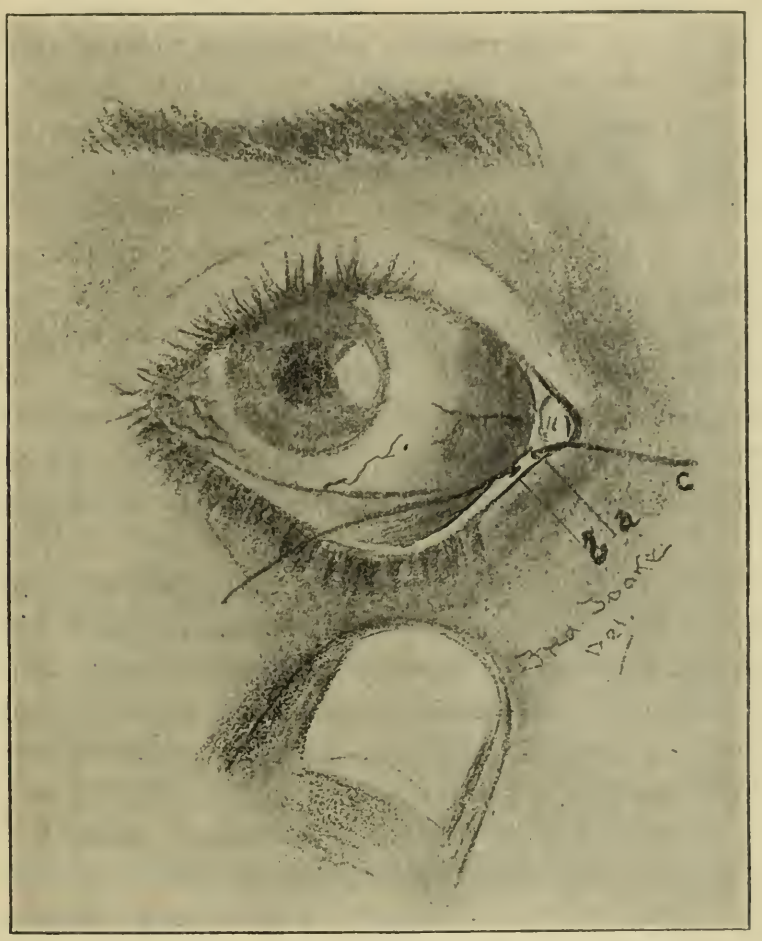


FIG. II.—(a) Has more the characters of the punctum in its being rounder and more everted than (b), which is flat and slit-like. Both unite into a common canaliculus shown by horsehair suture (c).

A search for information from such recognized authorities as Parsons[1] and Greeff[2] in their well-known works on the pathology of the eye, as well as from Fuchs[3] and De Schweinitz[4], in the latest editions of their textbooks, has proved very unsatisfactory. They all refer to doubling of the puncta as an anomaly but seldom met with, yet refrain from an explanation of any kind. Emmert[5] reports a case which he diagnosed as congenital lacrimal fistula, referring to it as a rare anomaly of the

tear passage. Steffan[6] also describes a patient who had a second punctum a line below and to the right of the normal one; it was uncertain whether it opened into the sac or to the other canaliculus.

Lang and Treacher Collins,[7] as well as others, refer to another anomaly of the canaliculi in their absence being taken by a groove in the lid margin. In my opinion, this may materially assist in explanation of the two cases which I have presented before you. At about the sixth week of fœtal life in the human, according to Ryder,[8] the first evidence of the lacrimal channel is manifested in the form of what has been termed the lacrimo-nasal groove. This extends from the eye to the outer border of the nasal opening, following a line, if represented in the adult, from the inner canthus to a point on the outer posterior margin of the nostril, next to the upper lip, just within the ala nasi, where it joins the cheek. This line in the adult lies approximately parallel with the tear or nasal duct. The lacrimo-nasal groove is then an involution of the ectoderm, and a thickening of the underside of the epidermis along this groove subsequently constitutes what we later understand as the nasal duct. This thickening forms a solid ridge, which then separates, except at each end, as a solid cord and acquires a lumen or channel, so as to become a canal of epidermal or ectodermal origin. The condition of congenital stricture of the duct may thus be explained to the non-development of the primary lumen in this fœtal structure.

At the inner canthus the upper end of the originally solid cord expands, preliminary to dividing into two small branches, which constitute the lacrymal canaliculi, ending in what has been accepted as the puncta. Should involution of the ectoderm or epiderm not be complete at any point besides the natural end of the lumen constituting the punctum, this accessory opening, in my opinion, should be accepted as a congenital fistula, or, as what I prefer in this instance to term, a fœtal cleft. Halben [9] has shown the puncta lacrimalia to consist of circular as well as longitudinal fibres of the orbicularis, with a large element of elastic tissue cells. Until histological evidence is produced showing the tissue about one of these accessory openings to be of like structure, it is reasonable to conclude that longitudinal fibres only with a lining of several layers of stratified epithelium as found throughout the canalicula, would constitute the histological structure at this particular point. Consequently, the openings which I have attempted to describe should be considered not as puncta, as we understand them morphologically, but as clefts due to a non-development of the fœtal lacrimo-nasal groove.

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IMPRESSIONS OF THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS AND BUDAPEST.

BY

R. H. CRAIG, M.D.

The city of Budapest was thrown wide open from the 28th of August to the 4th of September to the members of the Sixteenth International Medical Convention.

Each member of the Congress received a bronze medal of considerable artistic merit, decorated on one side by a relief of Aesculapius, and on the other a scene of the city and its coat-of-arms. To these were attached white ribbons for all physicians and the members of their families who were registered, green ribbons for delegates of medical societies, etc. These badges served as passes to all municipal buildings and institutions, to art galleries, museums and several of the famous sulphur spring bathing establishments. The wearer also received the most courteous treatment and assistance at every turn. As the Hungarian language is entirely different from any other in origin and construction, the visitor was often grateful for a few words of explanation from a kindly passer-by who spoke German or English. This courtesy, so universally extended, made a very favourable impression upon all the congressionists.

To the committees who managed the convention great credit is due. Some four thousand strangers had gathered from all corners of the globe, with ideas as varied as their languages. They came from China, Japan, Malay and Australia, from Africa and South America.

The plans for their accommodation, division into sections, comprising the various branches of the work in which they were interested, the arrangements for their entertainment and comfort, were remarkable in scope and in the success which attended them.

The office of the Hungarian Railways, known as the Central Bureau, had charge of the lodging of all members. For the first three days of the Convention this office was open day and night. Here the traveller who had registered in advance must go upon arrival and secure a card entitling him to the room at hotel or pension that had been reserved.

Many were the trials and tribulations of this Bureau during those first days. The work was well done, and for a small fee the traveller found everything arranged for him and was saved the usual exorbitant charges.

The Bureau also took charge of all transportation problems and arranged for half-a-dozen very attractive excursions, of which the congressionist, for a very moderate sum, might take his choice.

One trip penetrated the lower Carpathian mountains, visiting the summer resorts on the lakes in that region, and enabling the tourist to see Hungarian life in the interior. Another tour followed the Danube to its gates, those picturesque and massive cliffs which comparatively few tourists see. In that region Turkish influence is everywhere apparent and the towns visited are full of unique interest. Still another excursion was planned, with Constantinople as its destination, including Athens, Corfu, etc.

One longed for time and opportunity to take them all.

The Medical Convention had its headquarters in the old Polytechnic building, a vast structure, but none too large for its purpose. Each section had its own rooms, where papers were being constantly read and discussed, to the confusion of those of the members who, like myself, belonged to more than one section.

Some of the men evinced an extraordinary interest in the meetings. Gluck took the trouble to bring all the way from Berlin three cases of total extirpation of the larynx, with a nurse in charge. In one case the operation was so radical that the trachea and the œsophagus were sutured to the skin about one inch above the clavicle. The patients carried their œsophageal tubes with them and fed themselves. The artificial larynx was a complicated affair, and from my observation the patients seemed to speak as well without this apparatus.

Gluck, who had an elaborate paper in addition to these cases, was only allowed about fifteen minutes to demonstrate his pioneer work on this subject.

The conservative treatment of laryngeal and tracheal stenoses, as advocated by the American specialists in preference to the more radical methods adopted by Continental surgeons, seemed to me to be more rational. Dr. Chiari's first assistant, Dr. Kahler, has made a decided improvement upon the handle of Dr. Bruning's pan-electroscope for bronchoscopic work.

In the aural department the discussion as to whether labyrinthine deafness was primary or secondary to chronic catarrhal otitis media was most interesting. It was evident that the field of otology from the surgical point of view has materially enlarged during the past ten years; for just as the gynæcologist must be prepared to do an appendectomy

or an intestinal resection, so must the otologist be ready to treat all intra-cranial complications, such as cerebral and cerebellar abscess and sinus thrombosis.

Personally, the Congress was particularly interesting in that it gave me an opportunity to meet several of my old teachers who had not passed beyond the great divide, notably Professors Chiari and Politzer. The former is still well up in the firing line, both as a teacher and worker. Professor Politzer, though a much older man, is still keenly interested in all the latest advances in otological research, as the fifth edition of his book recently published testifies.

During the Convention there was a succession of demonstrations at the meetings and hospital clinics in all branches of medical science. In the huge structure placed at the disposal of the doctors one large room was reserved for the distribution of mail and complimentary tickets for the various affairs to which the members were invited. For instance, one hundred tickets had been presented for the horse races, two hundred for a gala performance at the opera, and a large number for visits to the Apenta Springs, where the bottling of the famous water was witnessed and a bountiful repast provided by the management. There were also invitations for visits to the champagne factories, municipal slaughter-houses, and various other places. A daily newspaper, published in four languages, contained the programme of each day and was given to the members.

Besides this and the administrative department, there were in the building a post-office, a branch of the great Central Bureau, and the ladies' room, which the ladies' committee had comfortably furnished with chairs, tables and writing materials for members and their families.

The personnel of the Convention was indeed remarkable. When they assembled, one understood the feeling of the inhabitants of the tower of Babel. Young and old from all countries and climates, they had but two things in common: a medical education and the desire for more knowledge.

Hungarians, Austrians and Germans naturally predominated. From Canada and the United States there were about 450 representatives, but England sent only 150. The Bohemian physicians refused to participate at all and issued to every member a manifesto presenting the reason for their action. The Anti-duelling Society also took occasion to distribute its literature, and among the many advertisements one enterprising Hungarian firm gave to each member two small bottles of wine.

Socially, Budapest did everything possible for the entertainment of her guests. A large opening reception was tendered at the Gallery of Fine Arts on Saturday evening, August 29th. The numbers of the

sections were placed conspicuously on the walls to give the members of each an opportunity of meeting and greeting.

The next morning, Sunday, the Archduke Joseph, in the name of the King, formally opened the Conference and received the members with impressive ceremonies amid a vast amount of gold lace and glistening orders. There were speeches by delegates from every country, and the Convention was officially open to begin work in earnest on Monday morning.

Monday evening another soirée was held. The great concourse gathered in the splendid Municipal Building and several courageous soloists endeavoured in vain to make themselves heard above the conversation of the multitude.

The next evening occurred the most interesting of the social events. On a small island in the beautiful City Park a perfect representation of an old Hungarian castle is used as an Agricultural Museum. The Ladies' Committee held here a reception, to which only members accompanied by ladies were bidden. The castle with its lines of dignity and beauty, the gay assembly thronging the court-yard and stately halls and apartments, the supper composed almost entirely of native Hungarian dishes, and the weird gypsy music dominating the scene, produced an effect that will long linger in the memory of all who were fortunate enough to be present. The Hungarian ladies were most kindly and assiduous in their attentions to the wives and daughters of the doctors. Every day they arranged for drives and trips to the museums, art galleries, and all places of interest in Budapest and vicinity, giving their entire time to their guests, but only upon this one occasion did they act as hostesses to the men.

Any mention of the social life of Budapest would be incomplete without a word of praise for these ladies. They were most charming, and their linguistic ability and gracious manner impressed all who had the pleasure of meeting them.

A most interesting gala performance at the National Theatre of the "Tragedy of Man" took place on Wednesday evening, and on Thursday evening the Archduke received formally certain of the delegates at the Palace in Buda. These and the receptions of the doctors' clubs constituted the large social events held in connection with the Conference.

Beside the hospitality of the Hungarian, every member was assured of their independent and patriotic spirit.

Each member of the Convention received literature explaining the political position of Hungary, so that no one left Budapest thinking that Hungary belonged to Austria. Far from it. It is a brave and

independent kingdom, allied with the Austrian empire. It has its own parliament, not only managing its own affairs, but having a voice in all foreign matters in which the Austro-Hungarian government is concerned.

In 1867 Emperor Francis Joseph and Empress Elizabeth were crowned King and Queen of Hungary and the ancient constitution revived after a series of revolutions and troublous times, extending over the previous twenty years. It is only since 1872 that the cities of Buda and Pesth, one on each side of the river, with the smaller town of O'Buda united into one city, the capital of Hungary.

The last four decades have witnessed wonderful strides in the development of Budapest, so that it now compares favourably in administration, sanitation, education, art and philanthropy with the most progressive cities of Europe and America. This was a great surprise to many of the visitors who had considered Budapest itself, as it is geographically, on the edge of European civilization.

Each member of the Convention was given a book containing a resumé of the governmental and sanitary activities of the city, with facts regarding its climate, vital statistics, hygienic regulations and institutions, medical, educational and charitable.

The carefully compiled comparative statistics make interesting reading. In 1720, after the expulsion of the Turks, Buda and Pesth had only 12,000 inhabitants. In 1909 there is a population of 823,000, showing an annual increase of 125 per thousand in a hundred years. Munich, with 115 per thousand, is the only European city that approximates this growth. It would not be fair to make comparison with the towns of the new world.

The death rate has decreased from 42.2 per cent., in 1874, to 20.1, in 1907, now taking a middle place among the cities of Europe in the matter of health. An interesting fact is the preponderance of male children.

The water problem has been a serious one for the city since the old Roman times, when an aqueduct was constructed, the remains of which are among the interesting sights of Buda to-day. The entire country suffers terribly from drouth, but modern engineering has overcome all difficulties, and the city is not only well supplied, but the water-works are among the most profitable of the city's enterprises. The canal system of sewage, installed in 1890, has the great advantage of emptying all sewage into the river below the city and preventing a long-existing sanitary drawback.

The street-cleaning system is interesting in that one man is given a

certain area of street, and, except in cases of severe snow-fall, he alone is responsible for its condition.

The city has a communal bread factory and communal slaughter houses, which include a municipal horse-flesh works. The city sells horse-meat and sausages at sixteen communal horse-flesh shops.

The Minister of the Interior makes an annual report to Parliament on sanitary subjects and the Home Office has a sanitary section. The major part of the staff of this section consists of medical men. There is a National Sanitary Council, whose president is nominated by His Majesty. It is formed for scientific discussion and practical suggestive work.

There is also a Medical Senate, whose duties comprise the examinations of medical opinions given in courts of law, expert opinions in cases of medical mistakes and the adjustment of medical fees. Another body is the Medical Senate for State Workmen's Insurance, which takes charge of the hygiene and matters relating to the medical welfare of the workmen.

The departments in bacteriological and chemical work, disinfection, and the production of serum are under city control. The problem of police and sanitary regulations, necessarily closely associated, have been carefully and thoroughly worked out to secure the best possible results.

The number of hospitals, both public and private, water cures, societies and unions for the relief of the poor, as well as asylums and institutions, and the large number of patients accommodated, are indeed surprising.

Students in Budapest have excellent advantages, and no doubt the clinics would become as celebrated as their progressive spirit deserves, but for the fact that all the teaching is done in the Hungarian language —an almost insurmountable obstacle.

The plan of sending foundlings out to country homes, keeping them always under strict surveillance, is extensively followed. As twenty-five per cent. of the births are illegitimate, the city has a serious problem to confront.

The medical men have so many social, sanitary and scientific unions that one is impressed with their energy. The Budapest Royal Medical Society appoints special committees with the object of keeping in view all discussions and discoveries relating to their special subjects, such as tuberculosis, cancer, etc.

An interesting affair is the Hungarian Travelling Association of doctors and scientists, which holds meetings in various towns. Officers from among the notables of the town are usually appointed, to serve for a

few days only, and a gold medal is awarded in turn for a medical, natural history, and social lecture.

Budapest has been occupied by many races, and has undergone many and strange vicissitudes. The Celts held the city until the Romans came. Under their rule it acquired some importance until it was overcome by the hordes from the East,—Slavs, Huns and Goths. The only remaining trace of their occupation is the Slavish names—Buda and Pest. Next came the Hungarians or Magyars, who flourished and built up the city until the Tartar invasion laid the town in ruins in 1241. It soon recovered, however, and for a short time attained the dignity of the residence of the German Emperor.

Periods of prosperity and trouble succeeded each other until 1541, when the Turks conquered the city, and for 145 years the crescent waved over the fort on the hill of Buda. Charles of Loraine, at the head of the allied armies, finally drove out the invaders, but it was a long time before the city recovered from its prolonged misrule. To add to its troubles, a terrible epidemic almost depopulated the town in 1710. In Pest only 300 inhabitants were left. Gradually but steadily the capital has overcome all difficulties and progressed, until now its fine streets, buildings, and advancement, are the admiration of all visitors. It is still, however, undeniably influenced by its Eastern neighbours.

Many of the buildings are Byzantine in character and there is frequently to be seen a bizarre decorative effect decidedly Oriental. Designs in coloured tilings, terra cotta work, and painting in bright colours ornament many exteriors.

One sees some very good examples of Renaissance style, and others again are pure Venetian. The true Hungarian architecture resembles that of Northern Europe in form, but the peculiar ornamental tiling, while not unlike that of Venice and the East, is distinctly original in effect. The Museum of Decorative Art is the only large building in Budapest in the pure Hungarian style. More characteristic than any other feature of ornamentation in Hungary, one sees the peacock feather, particularly the eye of the peacock feather and the onion pattern. In lace, china, embroidery, interior and exterior decorations, these designs are to be found.

The country people excel in a picturesque embroidery. Well-to-do rural families always have an elaborate funeral pall, like a curtain, of solid embroidery, which is kept in families for generations.

A number of fine statues enhance the beauty of the city, the newest of which was unveiled in the City Park during the Convention. It represented George Washington, and many Americans gathered to wit-

ness the ceremonies which included, according to the programme, "A Solemn Speech in French."

The City Park is a great acquisition to the city. It has magnificent drives through the woods, a beautiful garden and several fine public buildings, including the Agricultural Museum already mentioned, as well as coffee-houses, in one of which a very good military band plays every day. It is easily reached by carriage or an electric underground railway.

Another public pleasure ground comprises the whole of Margaret Island, situated between the two cities and reached by the Margaret bridge or by boat. The island was presented to the city for this purpose. At one end is a sulphur bath establishment, very complete in arrangement. A one-horse tram runs to the other end of the island. On this conveyance all Congressionists with badges were granted free transportation. Arrived at the end of the line, one found a large and fashionable restaurant with an excellent military band, and two athletic or sporting clubs.

The Hungarians have become very much interested in sports, and we watched a number of young men industriously practising the 100-yard dash.

In Pest one sees the splendid new Parliament Buildings and many other imposing modern structures, as well as most of the residences. The theatres and restaurants are there too, and the all-night cafés where gypsy orchestras play strange, eerie music until the wee small hours. These cafés, with their excellent coffee and native wines, are a feature of the place.

Connected with Pest by a number of bridges is picturesque Buda, surmounted by a cliff or mountain. Buda contains the Emperor's palace, the old fort, the market-place and some interesting churches. The tomb of an old Mohammedan saint, Baba, is among the sights of Buda. When peace was concluded with the Turks in the 17th century the Christians promised that this tomb should be preserved forever.

Besides all that was old and historic as well as new and profitable, the Congressionists found time for many small social functions, which were among the most enjoyable events of the Conference. Old acquaintances were in many instances renewed and new friendships were formed. In the opportunity for the exchange of ideas, both medical and otherwise, there was much to be gained in the many and varied points of view.

And it is safe to say that every man who was able to attend the International Medical Congress returned home with added inspiration for his work and renewed zeal to overcome its difficulties and discouragements.

A CASE OF DESTRUCTIVE LESION OF THE CONUS TERMINALIS SPINALIS.

BY

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Localised lesions of the conus terminalis of the spinal cord are so rare that the following case may be of some interest as showing the functions of this part of the cord.

H. H., male, aged 51, married, has been attending the out-door Neurological clinic at the Royal Victoria Hospital for the last four years. He came complaining of being unable to pass his water; numbness in the seat and in the left leg and foot, and to a less extent in the right foot, with some slight difficulty in walking, and of pains in the body and down the legs.

Previous to the 12th of July, 1898, the patient was in good health. On this date he fell about fifteen feet, striking his head and landing on his left buttock. He did not lose consciousness. Although his forehead was cut open and he had an injury over the spine, he was able to pull himself up the ladder and walk a rod or two to a waggon, and was driven home. The motion of the waggon caused excruciating pain in the back, but by means of supporting the weight of his body by his arms with his hands on the seat of the vehicle, he managed to reach his home, and was immediately put to bed. There was retention of urine from the time of the accident, necessitating catheterisation, and he had no control of the bowels. He remained in bed about four weeks, and then for some months could only get about with crutches, on account of the weakness of the legs.

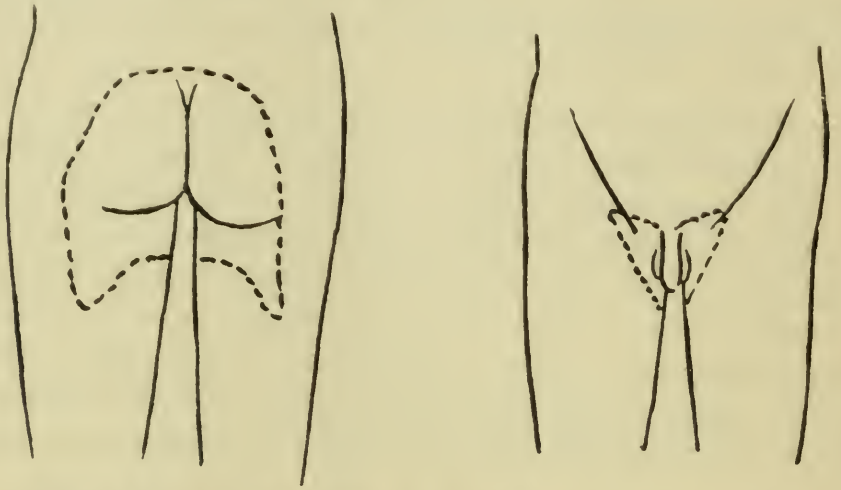
He states that he had loss of sensibility below the waist, and sharp pain down the left leg in the region of the sciatic nerve. The passage of the catheter caused no pain. From that time to the present he has suffered from chronic constipation, and after a cathartic has no control of the bowels; he still has complete retention of urine and must use a catheter at least twice a day. He has lost all sexual power. In addition to the symptoms just related, he had recently begun to suffer from sharp shooting pains in the legs, coming on in attacks, lightning like. They are described as being quite superficial. leaving the skin very tender to the touch, although not at all tender if the part is grasped firmly; they last only two or three seconds each. There is a history of a venereal sore, probably of luetic nature, some 10 years previous.

On examination: The patient is a pale-looking man, of average intelligence; his cerebration is quite normal.

Cranial Nerves.—Vision is slightly hypermetrophic; the visual fields are normal, the fundi appear normal. When the patient first came to the clinic, in 1905, both pupils were equal and reacted well to accommodation, but only sluggishly to light; under observation, the reaction to light has gradually been lost first in the right, later in the left eye, until at present they are of the typical Argyl-Robertson variety.

Muscular System.—There is no atrophy, nor muscular weakness, but there is a slight inco-ordination in the lower extremities in the knee-heel test with the eyes closed; this appeared only since he has been under observation.

Sensory System.—The patient has objectively a definite area of complete anæsthesia and analgesia over the buttocks, in the perineum and over the scrotum and penis as is well shown in the accompanying photographs. There is also loss of sensibility in the urethra, and in the lower part of the rectum.



Showing area of loss of sensibility following fracture of spine, corresponding to the area of distribution of the 3rd, 4th and 5th sacral segments.

Reflexes.—Those of the upper extremities are normal. At the first examination both the knee jerks and the ankle jerks were not obtained, and are still not obtainable; the abdominal and epigastric reflexes are active, and the plantars give the normal flexion on both sides. The anal reflex is absent, there being complete paralysis of both the sphincter and the levator ani. As mentioned before, there is retention of urine and loss of control of the bowels.

When standing with the eyes closed, the patient sways slightly (Romberg's sign). Examination of the back shows prominence of the twelfth

dorsal and first and second lumbar spines with a slight curvature to the right.

The skiagraph shows considerable compression of the second lumbar vertebra, a slight injury to the first, with a crushing of the disc between these two so that it is about half the thickness of the discs either above or below it.

We know that the cord terminates in the adult opposite the upper edge of the second lumbar vertebra, so that it seems more than probable that in this case there has been a complete and permanent destruction of the extreme end of the cord, in fact the photograph shows an area of loss of sensibility corresponding to the third, fourth and fifth sacral segments, besides this there is loss of sensibility in the urethra and in the lower end of the rectum. The motor symptoms associated with this, and which, therefore, may be supposed to obtain their innervation from the same segments of the cord, are paralysis of the bladder and rectum, paralysis of the levator and the sphincter ani and loss of the power of erection. The patient, of course, shows slight but definite symptoms of Tabes Dorsalis, but these have practically all developed under observation so that it has been quite possible to differentiate the two conditions.

RABIES IN CANADA.

BY

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In dealing with this subject, it is not my purpose to enter into an extended history of the occurrence of rabies in Canada, but to deal with certain features of more or less general interest.

Rabies has occasionally been observed in Canada, but never has an outbreak assumed the serious proportions reported as occurring in certain parts of the United States. Until very recently cases of this disease were very exceptionally reported, and an element of doubt still exists, in many instances, concerning their identity.

Niagara Falls, Ontario, and vicinity prior to 1899 recorded outbreaks of the disease and a number of animals were dealt with, either dying from the malady, or being destroyed on suspicion, in the interests of public safety.

Since 1899 I have been charged with the responsibility of diagnosing this affection from material forwarded to the laboratory under my direction, and until the year 1905 no case had been dealt with from which unmistakable proof as to the presence of the disease had been obtained. Previous to this date the circumstantial evidence gave decided indications

as to the existence of the disease, and one such case was met with in 1899. No doubt veterinarians and medical men in Canada had met with unmistakable cases prior to that time, directly or indirectly traceable to imported dogs.

In 1904 a case of rabies was reported as occurring in a man at Victoria, B.C., previously employed in building boats at White Horse, Yukon Territory. He was bitten one night by a supposedly tame wolf, the fingers of one hand being torn off and the palm of the other very seriously lacerated. The wounds were immediately cauterized and healed quite readily. He subsequently removed to Victoria, his home, but was much worried about himself, fearing that he would develop hydrophobia, and provided himself with all the literature he could obtain on the subject. Symptoms clinically indistinguishable from rabies developed three days before admission to the hospital, gradually becoming more severe, death ensuing on the evening of December 31st, 1904. An autopsy was not allowed. The wolf was shot the day after inflicting the wounds, and there is, therefore, no corroborative evidence from this source as to the diagnosis. To Dr. Edward Hassell I am indebted for a complete report on this case.

I cannot believe that this man suffered from rabies, although the possibility of wolves being affected is not at all improbable, but it is hardly likely that the disease is enzootic among these animals or other similar cases would have occurred in the interim.

From the brief history above outlined, it is apparent that rabies was not prevalent to any extent in Canada prior to 1905, although a careful scrutiny of the literature previous to that time does present data indicative of the occurrence of isolated cases of the disease in various parts of the country, both in the human being and the lower animals.

Since 1905 isolated cases have occurred, the most frequent outbreaks appearing in the Niagara Peninsula. These outbreaks in the majority of instances have been traced to dogs from across the river. Similar evidence is available relative to the responsibility for the appearance of the disease in other parts of Canada.

Owing to the very rigid measures instituted by the Inspection Division of the Health of Animals Branch of the Department of Agriculture, rabies has never become epizootic in any portion of the country, each outbreak having been handled with great care and with such thoroughness as to reduce to the minimum the possibility of recurrence. During the outbreaks the usual farm animals have been bitten, and when allowed to live a certain percentage have presented typical symptoms and died after the usual period. An unusually long incubation period is reported for a horse in Manitoba, and the laboratory animals inocu-

lated with this material were under observation for ninety-three days before any evidence of the disease was manifest, indicating that the virus was of a greatly attenuated variety. The usual period of incubation for inoculated animals is from fourteen to twenty-five days, although the American Public Health Association hold that a negative report should not be made in less than three months from the date of inoculation.

From the laboratory standpoint, while we have received material from a number of cases of rabies, we have dealt with comparatively few cases, as compared with laboratory workers in the United States. I had hoped to be able to present some detailed statistical evidence concerning some of the material received from time to time, but unfortunately this is not available, as I have had insufficient opportunity to complete the details of this work.

I have not yet assumed the responsibility of diagnosing the disease on the presence of the bodies described by Negri, nor on the alterations in the plexiform ganglia, as our experience has been confined to such a very limited number of cases. I have, however, found Negri bodies and have frequently observed the lesions reported by various investigators as characteristic of the disease in the plexiform ganglia, yet I do not consider myself sufficiently expert to depend on either.

Were I confronted only with giving advice to persons bitten as to the necessity for taking the Pasteur treatment, then some shorter method than that involved in the inoculation of a series of animals would be adopted.

While a few outbreaks of rabies have been officially dealt with in Canada, the disease has not assumed the serious menace reported in some sections of the United States, and it is to be hoped that the strict measures enforced in each instance where a suspicious case occurs will prove effectual in its eradication.

The fact that many of our outbreaks have been traced to imported dogs indicates that a careful regulation of their introduction into Canada would relieve us of the most important source of infection.

I may suggest that where a dog is exhibiting symptoms of rabies it is a most unwise procedure to kill the dog if anyone has been bitten. The safest course to pursue is to securely confine the dog forty-eight hours, owing to the fact that an animal never recovers from rabies after the onset of the characteristic symptoms. The symptoms during this period of observation gradually increase in severity and death ensues. If the symptoms subside and the dog recovers from the supposed rabiform manifestations, then it is quite safe to conclude that the animal suffered from some disorder other than rabies. The holding of the dog for the

period mentioned determines the course of action and the nature of the advice to be offered by the attending physician much more rapidly and surely than any laboratory technique at our disposal.

Although I have been charged with making the examinations in suspected cases of rabies in animals for some years, I have held and still continue to hold that the advice of a physician fully conversant with the local conditions should be followed implicitly, and, if necessary, the Pasteur treatment should be commenced without delay.

The cauterization of wounds, where an individual has been so unfortunate as to have been bitten by a supposedly rabid animal, should be with fuming nitric acid. In the event of this acid being unavailable, silver nitrate should be used. Other methods of cauterization have been found to be less effective.

In conclusion, it may be interesting to learn of the principles underlying what is known as the Pasteur treatment. The treatment of rabies, as devised by Pasteur, depends primarily on the *fixed virus*. This *fixed virus* is a virus that proves fatal to a rabbit with almost mathematical precision after subdural inoculation, hence the term *fixed*. To obtain this fixed character, serial transference of the virus through about one hundred and sixty rabbits is required. The brains and cords of rabbits dying of rabies after inoculation with the fixed virus are removed and dried over caustic potash. This drying attenuates the infective agent, and experience has taught that for certain injections the drying in this manner for a definite number of days is necessary.

The first injection received by a patient is from an emulsion of such a degree of attenuation that no untoward symptoms are likely to follow, save a slight hyperæmia of the skin. From day to day the patient is given injections from emulsions of gradually increasing virulence until he is able to withstand the injection of virus slightly below that of the fixed virus without serious reaction. This process usually requires from twenty-one to twenty-five days, at the end of which the patient is considered out of danger from the injury occasioned by the suspected animal. This whole course of treatment is given in the anticipation of forestalling the natural development of the disease, consequently delays in its administration, where such a course is considered necessary, are to be avoided.

The so-called Pasteur Institutes on this continent have no connection with the original institute founded by Pasteur in France, which is so well and favourably known throughout the civilized world, with the exception that the methods followed are along the classical lines originated by him.

The Pasteur treatment is furnished to physicians in the United States by the Public Health and Marine Hospital Service, and several of the States and some cities have established laboratories and are prepared to administer the treatment. Laboratories other than these are maintained as private enterprises, and I believe that all within the United States are licensed after inspection by the federal government.

THE ACTION OF SOME REMEDIES ON THE HEART IN DISEASE.

BY

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It is with some hesitation that one approaches the subject of disease of the heart from the standpoint of the therapeutist. The first cause of hesitation is the lack of much new matter and the difficulty of presenting the old in a new light. The second is that as yet the pharmacologists have not been allowed to carry out treatment under scientific conditions in a sufficient number of cases to have acquired any real knowledge of the underlying pathological physiology of the heart in disease. Our knowledge of the action of drug-stuffs upon the normal heart muscle is every day becoming more exact, and from what we know of the diseased conditions we can in many cases fairly infer what will occur when certain remedial means are adopted, and in many instances these inferences simply serve to confirm the empirical knowledge of the clinician.

It will perhaps enable the whole subject to be approached in a fresh manner if we follow the new physiological descriptions of the heart's action and consider the pathological conditions which affect rhythm, contractility, irritability, conductivity, and tone.

The pathological variations of rhythm, or more simply, rate with a normal heart beat, are of two types, a super-normal or a too fast rhythm and a sub-normal or too slow rhythm.

Supernormal Rhythm.—A heart warmed artificially beats more rapidly but relaxation is equally good, its contractility also remains as before or increases; in other words its rhythmicity has altered positively. The heart in moderate fever beats rapidly, not owing, of course, to the increase in temperature alone but also to the action of the toxines, but its beat in many cases is efficient, contractility and tone being normal. If we judge from the action of drugs, it is still under the control of the vagus centre since its rate may be decreased by digitalis, for example. In severe toxæmia there is some experimental as well as pharmacological evidence that the

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vagus centre has lost control of the heart: digitalis and strophanthus are no longer effective. The rapid heart beat of severe pneumonia or septicæmia cannot be influenced by digitalis. The action of these drug stuffs is largely through the vagus centre, though in part they affect rhythm by acting on the vagus endings in the heart. Kothe and John[2] have presented some evidence that adrenalin, which acts upon vagus endings in the heart, has not entirely lost its power to slow the beat in cases of toxæmia. For this purpose adrenalin must be administered intravenously in doses of 0.2—1 c.c. In some severe cases, this drug also fails to produce any effect. We have, however, a drug stuff which acts very powerfully upon the heart muscle itself to decrease its rhythm. This drug stuff is barium chloride and the work of Scaffidi[7] would lead me to try it as an emergency agent in extreme cases. The administration would, of course, be made intravenously as its action is very slow and uncertain if administered per os. 1/10—1/5 grain is the dose I would choose.

A second class of superoptimal rhythms includes these cases in which vagus control of the heart has been lost. This occurs for example in shock. In this case the myocardium is intact and can be acted upon by such drugs as digitalis, but strychnine on account of its action on the medulla seems more directly indicated as it will tend to restore the function of the depressed vagus centre and will also increase the blood pressure. Increase in the blood-pressure, which may be obtained by adrenalin intravenously in small doses (2-10 min.) repeated every 10 minutes, or by ergotoxine (1/100 gr.) intravenously followed by adrenalin, will reflexly decrease the heart rate. Ergot and adrenalin seem also to increase the blood flow through the coronary arteries and hence improve its nutrition. The careful work of Y. Henderson,[8] who has shown that shock can often be relieved by increasing the carbon dioxide in the blood, would suggest intermittent smothering of the patient and thus increasing the carbon dioxide percentage in his blood. This treatment in animals suffering from artificial shock undoubtedly aids in restoring the efficiency of the centres. The tachycardia of exophthalmic goitre seems to be another case of decreased central control. In some cases digitalis seems to be able to stir up the centre and decrease the rate, in other cases it seems ineffective. The central action of small doses of atropine similarly is effective in some cases. Morphine acting as a general depressant to the reflex centres is often a successful agent. The point pathologically affected is the medullary centres and not the heart muscle, and hence treatment is not to be directed to the heart in the first instance.

A third class of super-normal rhythms are those which are secondary to broken compensation, and in which the heart muscle is still moderately healthy and the beat of the heart, while fast, is regular. In this class of case digitalis is efficient in reducing the rhythm to normal. The main treatment, however, would be rest until compensation is restored and then carefully graduated heart exercise to aid in muscular hypertrophy. This heart exercise may be obtained by carefully graduated baths with their reflex effects upon the work of the heart (as conducted by Schott in Mannheim), or by mild walking exercises (Oertel), or by Swedish movements. In the later stage of these cases the beat frequently becomes irregular and the muscle fibre has suffered more severe pathological changes and digitalis is no longer of value. The case might then be counted as one of the fifth class. When one administers digitalis to cases in which the rhythm is fast but regular, any irregularity occurring during its administration should lead to cessation of its administration.

A fourth class of cases are those in which the cells about the mouths of the great veins have become relatively less irritable and those in the bundle of His relatively more irritable. The heart-beat arises in the bundle of His or its source in the specialized fibres of the atrio-ventricular node. The beat spreads from its point of origin in the node to both auricle and ventricle simultaneously: both chambers beat in unison. In many of these cases, which MacKenzie[1] terms cases of nodal rhythm, the action of digitalis is almost "miraculous." I may point out that in these cases of nodal rhythm the action of the heart is often irregular, nor does digitalis serve to restore it to a normal rhythm, but owing to its beneficial action in slowing the heart and in improving tone and contractility may enable the heart to regain its compensation. The pathological changes in this class of cases consist in degeneration of muscle fibres due to overwork and to localized scleroses, but the main mass of the muscle fibres are still healthy.

In the fifth class of cases the muscle cells are very generally diseased. The pathological changes usually found consist in marked arteriosclerotic changes in the coronary arteries and fibrous and fatty changes in the muscle cells. (The Sclerotic Heart cases of MacKenzie.) Clinical symptoms consist in irregularity and lack of response to sudden exertion. In these cases, as a rule, slowing of the heart cannot be achieved with digitalis, though it seems that there is little danger in its administration with caution if heart-block has not already occurred. The treatment needed seems to be largely rest and the doing away with nervous strain, the banish-

ment of worry. A healthy life with gentle exercise and abundant sleep, for which purposes chloral or bromides may have to be used, is the treatment to be adopted.

Sub-normal Rhythms:—The sub-normal rhythms may be divided into several classes. The first may be described as true bradycardia; in these cases the rhythm is normal in character but slow. This may be due to inherent conditions in the heart muscle, in which case caffeine and camphor[4] given subcutaneously are the drug stuffs which seem to be indicated. Both of them increase the rate of the heart's action. The second cause of a true bradycardia may be vagus irritation, due, for instance, to meningitis, cerebral tumours, or occur owing to reflex irritation from the abdominal cavity. These cases are of course best met by doing away with the original cause, or by some drug stuff such as chloral or bromides which decrease the activity of the vagus centre.

The second class of subnormal rhythms are combined with irregularity. Bradycardia is often diagnosed when the condition is one of missed beats (that is, those cases in which every alternate ventricular contraction is not of sufficient force to cause a pulse wave at the wrist), or when the condition is one of heart-block (that is, when each auricular beat is not followed by a beat of the ventricle but when possibly only every second or third auricular beat is so followed). In these two last types of sub-normal rhythm (missed beat, heart-block) caffeine, which increases the conductivity and also the rate, seems to be the most promising drug stuff to use in treatment if any is needed.

Changes in contractility might also be of two types: hypercontractility, of which we know nothing, and sub-normal contractility, which occurs so commonly in acute toxæmia. In this case digitalis has also no, or little, action. Caffeine also seems to be uncertain, for adrenalin the evidence is slight but promising, and barium chloride remains still to be tried. In moderate fever digitalis does improve the contractility as does adrenalin. When the sub-normal contractility is due to exhaustion owing to over-work of the heart, as occurs in broken compensation, and is combined with dilatation, digitalis is to be relied upon to restore to contractility and tone. Caffeine is also of service. Rest and gentle exercise are the important factors in making the heart capable of performing its function, with some small reserve for use in emergencies.

Conductivity may be decreased in certain types of heart disease. In these cases we find that either the conduction from the point of origin of the normal heart wave about the mouths of the great veins or from auricle to ventricle through the bundle of

His are decreased, and in consequence we have either nodal rhythm or heart-block. If heart block has occurred digitalis must not be used as it decreases the conductivity and in consequence will make the block more complete. It seems remarkable that it should be of service in nodal rhythm, but this fact has been established by the careful work of MacKenzie. Caffeine has this advantage over digitalis in both these classes of cases that it increases conductivity instead of decreasing it.

The Tone of the heart muscle becomes deficient in acute toxæmia, and here also digitalis is of no value. Caffeine may be of use as it markedly increases muscle tone throughout the body. It, too, seems to fail in the majority of cases, and as the condition is accompanied with a rapid beat it is considered contra-indicated by many physicians. Barium chloride is the only drug stuff which seems to promise to be of value in these cases. When the tone is decreased owing to exhaustion and the muscle fibres are still relatively healthy, as for example in most cases of broken compensation, digitalis is of great value.

The blood supply to the heart is very important from the standpoint of treatment. We can now lay it down as a rough rule that drug stuffs which constrict peripheral vessels dilate the coronary arteries and vice versa.[6] Digitalis has little action in therapeutic doses upon peripheral vessels,[7] but it slightly increases the amount of blood passing through the cardiac circulation. In the case of angina pectoris the blood-pressure frequently is high. The strain on the cardiac muscle is great. The administration of amyl nitrite frequently gives relief, but, as MacKenzie has shown, the blood-pressure is frequently as high again in five to ten minutes. The pain, however, does not recur. The temporary relief of the strain upon the heart has been sufficient to do away with the pain. In other cases amyl nitrite is not effective in decreasing the pain, and as in a case described by MacKenzie the cause here probably lies in a coronary vessel spasm. Amyl nitrite will not decrease this spasm, while possibly some drug stuff which increases peripheral pressure would dilate the coronary vessels, adrenalin for example. Such heroic treatment is, however, not likely to be adopted, and we must hope to find our cure for such a case in the administration of some sedative to the central nervous system. In the case of MacKenzie's to which I refer morphine was successful. Arteriosclerosis of the coronary vessels we cannot overcome, and in consequence our treatment should be directed towards encouraging a gentle, careful life with plenty of fresh air, good sleep, and little worry. The

only drug stuff which at present we suppose relieves in the slightest the sclerosis is potassium iodide, and its action is completely unknown.

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A RETROSPECT OF SOME OPHTHALMIC BACTERIOLOGY.

BY

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The reports of the last year or two place the bacillus influenzæ in a much more important position in ophthalmic bacteriology than formerly. While no positive results are to hand from the inoculation of the human conjunctiva, Axenfeld wrote in 1907, that he believed it extremely probable that the bacillus influenzæ could occasionally produce a conjunctivitis. Recent statistics show that influenzal conjunctivitis does occur. In Rosenhauch's report one finds a number of such. His six cases consist of an acute conjunctivitis in an infant of fourteen days, which resembled clinically gonorrhœal blennorrhœa; a mild case of acute conjunctivitis with muco-purulent discharge, in a child of three weeks; a subacute conjunctivitis of both eyes in a child of three months; a subconjunctival abscess; a dendritic keratitis; and an abscess of the orbital cavity. In all these cases the bacillus influenzæ was isolated, either with the bacillus xerosis or staphylococcus albus. They show how varied influenza infections of the eye may be.

In the case resembling gonorrhœal ophthalmia, the mother suffered from a leucorrhœa. A bacteriological examination of the mother's discharge would have added interest to the report, and would, probably, have demonstrated the presence of the influenza bacillus.

Gurd described bacilli resembling the influenza bacillus in cases of vaginitis, and the writer recently obtained from a vaginitis case a bacillus in pure culture, which was identical with the bacillus influenzæ in morphology, but in culture resembled an organism described in conjunctivitis cases.

The orbital abscess occurred in an adult male of twenty-two years. Twelve days previously he had contracted a bad cold with stoppage of the right nostril. For eight days he had temperature and profuse nasal discharge. The upper lid of the right eye now began to swell.

From the history and the examination of the nose it was seen that the abscess originated secondarily to the inflammation in the frontal sinus. In spite of the serious symptoms and the rapid progress of the disease, free incision and good drainage brought about a quick recovery. While conjunctival cases are rarely complicated, cases such as the abscess of the orbital cavity indicate the necessity for treating influenza infections actively. Serious complications do occur. Eversbuch described a purulent choroiditis in influenza, caused by the staphylococcus citreus and an odd coccus, Despagnet a purulent irido-choroiditis through staphylococcus and streptococcus.

Unna discusses the origin of these cases, and while he does not deny the possibility of metastatic infection from the influenza bacillus, nevertheless he believes that we must adhere to the principle that only such metastasis should be recognised as caused by the bacillus influenzæ, where the exciter has been proven present in the eye.

Mennier, Jehle, Pacchioni, and others, have demonstrated the presence of Pfeiffer's bacillus in the blood, so it is no longer doubtful that it can invade the eye as well as other organs by this route.

Unna reported a case of intra-ocular suppuration from the bacillus influenzæ in an adult of sixty years, who had had a swollen and painful eye for two days. The lids were swollen, the conjunctiva chemotic, and the cornea covered with a purulent secretion. Five days later the globe was evacuated.

From the conjunctival discharge, staphylococcus, streptococcus, bacillus xerosis, and bacillus influenzæ were obtained, while from the pus within the eye, the bacillus influenzæ only. Unna emphasizes two points: (1) Here was a case of ophthalmia due to bacillus influenzæ, where a bacteriological and pathological examination was made, and (2) There could be no doubt as to the route of the infection. It was exogenous as there was no general influenza, as the globe was particularly adaptable to infection from without, and because the presence of the bacillus influenzæ was proven from the beginning.

Fischer after noting the frequent presence of the bacillus influenzæ in the human conjunctiva as a saprophyte, mentions a positive inoculation by McKee, with an "uncommonly persistent strain of bacillus influenzæ". The organism with which McKee was working was not, however, bacillus influenzæ, but an organism similar to it only in morphology.

Having met with a case of panophthalmitis in Axenfeld's clinic, from which he obtained the bacillus influenzæ, Fischer experimented with animals to see (1) if he could produce a panophthalmitis with

this organism, (2) whether multiplication of the bacilli would take place in the eye, and (3), whether the bacillus was pathogenic for animals. After studying the effect on rabbits, guinea pigs and white mice, Fischer came to the following conclusions:—(1) The inoculation of bacillus influenzæ into the interior of the eye, especially into the vitreous, can produce a severe inflammation. (2) The inflammation is not due to the death of the organism and the consequent necrosis of the bacteriological bodies and liberated toxins, but to the multiplication of the bacilli themselves. In other words a non-pathogenic organism was pathogenic in the vitreous, so that, under these circumstances, we must attribute the ability to produce disastrous inflammation within the globe to the bacillus influenzæ. Fischer attempted to cultivate the influenza bacillus on serum and peptone agar, but failed. Rosenhauch, while not denying the growth of bacillus influenzæ on hæmoglobin-free agar, believes that the best medium is blood agar and that the presence of the staphylococcus albus expedites the growth. As pigeon's blood is rich in hæmoglobin, it makes the best medium. This seems to be the consensus on these several points. Some writers report a difficulty in cultivating bacillus influenzæ on hæmoglobin media after cultivation on hæmoglobin-free media, but I have never experienced this characteristic of the bacillus influenzæ.

Alt has recently reported an epidemic of pneumococcus conjunctivitis, which occurred during the spring and summer. The infection was always bilateral, and varied greatly in the clinical appearance, so that there were few cases which could be called typical. The cases varied a good deal in severity. Some simulated angular conjunctivitis. In the majority, no complications followed, and the duration varied from five days to several weeks. Alt, during a period of two months, contracted a pneumococcus conjunctivitis twice, showing that there was but a short period of immunity.

He advises staining the films with a drop of 1-10,000 solution of azure 2 of the Giemsa stain, and says that this gives a beautiful picture, and a much clearer one than any stain he knows of. Nevertheless, it is of the utmost importance to know whether an organism is Gram-positive or negative, and while other stains give clearer pictures, the use of Gram's stain as a routine will be found most satisfactory.

It is now well understood that Morax-Axenfeld conjunctivitis occurs at times in a very acute form. No form of conjunctivitis varies as much in its clinical picture as the Morax-Axenfeld. Ocampa recently reported cases of very acute inflammation of the

conjunctiva due to this diplobacillus. In certain districts the diplobacillus is very frequently found as the cause of ulceration of the cornea. Zade described twenty-seven cases where the diplo-bacillus was found in smear and culture. Curiously enough, in these cases there was an absence of conjunctivitis. McKee reported twenty-eight cases of ulceration of the cornea due to the diplo-bacillus. Some of these were undoubtedly secondary infections from the conjunctiva, in cases where foreign bodies had been removed from the cornea.

During Zur Nedden's bacteriological work at Bonn, he met with some cases of ulcus serpens, in which no pneumococci could be found. Cultures were made with different media, to exclude error as far as possible. In the first case Gram-negative cocci and the bacillus xerosis were found in the smear, while the culture revealed the bacillus xerosis and the streptococcus. In the second and third cases the bacillus subtilis was found with colonies of sarcina and xerosis. The bacillus subtilis was pathogenic for the cornea and vitreous of rabbits.

The reports of Foster and Pusey are of interest. Foster found the typho-bacillus in pus from a case of acute dacryocystitis, in a boy, three weeks after an attack of typhoid fever.

Pusey isolated the bacillus pyocyaneus from a case of subacute follicular conjunctivitis, and from a healthy conjunctiva.

Continued examination in ophthalmia neonatorum shows the frequent presence of other organisms than the gonococcus. Harman reports:—Gonococcus in 80 per cent.; Koch-Weeks, colon bacillus pneumococcus, 20 per cent.

Mayou in forty cases found:—Gonococcus, 57.5; staphylococcus .20; Morax-Axenfeld diplo-bacillus, .5; Colon bacillus, .5; pneumo-coccus, 2.5.

From the reports of the Montreal General Hospital we find:—Gonococcus, 52 per cent.; streptococcus, 12 per cent.; pneumococcus, 8 per cent.; micrococcus catarrhalis, 8 per cent.; diplo-bacillus Morax-Axenfeld, 4 per cent.

Harmon's statement that film examination is a sufficiently accurate means of detecting the causal micro-organism needs to be qualified. Inoculation of suitable media is necessary, at least in all cases where the film examination has been negative.

Rosenhauch, after examining the conjunctival sacs of two hundred new-born babies, came to the following conclusions:—

1. The conjunctival cul-de-sac is absolutely clear immediately after birth.

2. The first micro-organisms appear twenty-four hours after birth.

3. After twenty-four hours the bacterial flora is constant.

4. It is not to be differentiated from the adult.

5. The staphylococcus non pyogenes non liquefaciens, and the bacillus xerosis are constant inhabitants.

6. Other micro-organisms are only sporadic.

7. Pathological micro-organisms are seldom found, and then only a few.

8. Twenty-four hours after birth, the conjunctival sac was never free from micro-organisms.

9. Gonorrhœal infection is hardly possible during birth,but usually occurs during the first couple of days of life.

In spite of all that has been written about the bacillus xerosis as a benign, constant inhabitant of the conjunctival sac, one finds Dernabe describing cases of conjunctivitis due to this micro-organism.

Grüter last year described a yellow Gram-negative bacillus which he isolated from a case of chronic trachoma. In smear he found staphylococci and xerosis-like rods. On serum large lemon-yellow colonies were found. They did not contain staphylococcus citreus, but a long Gram-negative bacillus. Repeated inoculations of media gave this same bacillus. The micro-organism is a long, xerosis-like rod with rounded ends. They lie mostly parallel or at right angles. They are easily stained, are Gram-negative, non capsulated, and non motile. On serum the colonies sink into the media after a few days, and with repeated inoculation there is some liquefaction along the line of inoculation. Upon agar there is a good growth of pale yellowish colour. No pathogenic qualities were found from animal inoculation. Grüter differentiates it from the other conjunctival micro-organisms.

Pascheff has described three examples of a peculiar disease of the edge of the eyelids. He believes that the malady has not been described and calls it "folliculitis ciliaris necrotisans infectiosa." The cause is obscure. In the three cases, streptococcus was found in the first, staphylococcus aureus in the second, and a peculiar bacillus in the third. The bacillus in question was isolated from the infected cilia, was found in sections of the diseased parts and was of an extremely virulent nature. It was a short Gram-negative bacillus with rounded ends. The micro-organism was examined by Axenfeld, Morax, and Calmette. Axenfeld thought that it was a bacillus not yet found in the eye, but Calmette regarded it as the pneumobacillus of Friedlander.

Posey recently reported a case of keratitis probably due to metastatic gonorrhœa. The inflammation occurred in a male of 28 years, and had the characteristics of an unusual form of vesicular keratitis engrafted upon an old macula. The patient had not suffered from arthritis, but a bacteriological examination demonstrated "gonococci" on the cornea and in the urethral discharge.

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A CASE OF TUMOR OF THE VERMIS INFERIOR CEREBELLI.

BY

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Lesions of the lateral lobes of the cerebellum are relatively common and their symptoms comparatively well known; lesions of the vermis, however, are so uncommon that any contribution to our knowledge on the subject should be of interest. The following case seems to be especially typical.

J. R., aged 35, male, was admitted to the Royal Victoria Hospital, under the late Dr. James Stewart, on the 15th of February, 1906, complaining of pain in the back of the head. He had always been a farmer in the summer, working in lumber during the winter, and had always enjoyed good health. He did not use tobacco nor alcohol and denied any venereal disease. He had been married six years but had no children; his wife had had no miscarriages.

His present illness began some three and a half years previously. When he was ploughing in the field one day he was seized with sudden vertigo, the ground seemed to rise up in front of him and he fell forward, but did not lose consciousness. He was able to continue working, but about a month later he began to suffer from severe headache, associated with vomiting, which, with the attacks of vertigo, was so severe as to render him incapable of working. One day, about a year after the onset, while he was sitting in a chair, he suddenly cried out and

Photo 1.

became rigid all over; the arms and legs stiffened out, the eyes were turned up, and the mouth was drawn to one side (the wife thinks it was to the left). For about a year then he suffered from similar attacks almost every week, and during this time also he noticed that he saw double, the images being side by side,—as there was no ptosis it is probable that this was due to an external rectus palsy, consequent on a paralysis of the sixth nerve so commonly seen in tumors of the brain without having any localizing value. He also noticed that on rising after staying in bed for any length of time, the floor would seem to rise up to meet him, just as in his first attack.

He has staggered in walking, especially in the last year, mostly to the right, according to his wife.

On examination, cerebration was normal, and nothing abnormal was discovered in any of the viscera.

He had four dioptric swellings of the optic nerve in each eye, with some slight peripheral impairment of the fields of vision. On admission there was no definite involvement of the oculo-motor nerves, but four days later he developed a definite paralysis of the left fourth nerve, with impairment of downward movement and diplopia, the images being seen one above the other and a little to one side. About the same time he developed also a paralysis of both the motor and sensory branches of the fifth nerve on the left side with the typical distribution of anæsthesia

Photo 2.

on the face, and weakness of the temporal muscle, the masseter and the pterygoid. On opening the mouth the jaw deviated to the paralysed side. He complained also of a dull, numb feeling over this side of the face. The left pupil became larger than the right, and there developed a nystagmus when he attempted to look to the left, which was not present when he looked to the right. On upward movement of the eyes there was also an associated lateral nystagmoid jerking with a quick movement to the left and a slow return to the right.

No weakness nor loss of tone could be demonstrated in any of the extremities, but with the onset of the fourth nerve paralysis there appeared a slight inco-ordination of the muscles of the left arm on voluntary movement.

In walking, the left shoulder was held higher than the right, the head was inclined to the right and slightly rotated, so that the occiput approached the right shoulder; the left foot was held slightly abducted and rotated out. There was a tendency to stagger, but not more to one side than to the other. When standing with the eyes closed there was a decided tendency to fall backwards. Diagnosis of tumor of the vermis cerebelli was made, and the growth was thought to have extended into the left cerebellar hemisphere. He was transferred to the surgical ward and the first stage of the operation performed on February 26th. This consisted in trephining the skull in the left occipital region. The second stage was performed a week later. Unfortunately, however, the tumor was not found and the patient died on March 16th.

Photo 3

On post mortem the convolutions on the left superior surface of the cerebellum appeared broader and flatter than on the opposite side. There was a large broken-down area on the postero-inferior surface at the site of the exploration (see photo) which can be seen in photo 2 to have been directed exactly towards the tumor growth.

The pons and medulla were then separated from the cerebellum by section through the peduncles. On making a series of horizontal sections through the cerebellum at levels shown in the first photograph, a tumor about the size of a marble was found invading the vermis—the nodule and uvula chiefly (see T i. Fig. 2) with, in addition, a cyst cavity extending into the right cerebellar hemisphere laterally and posteriorly. The tumor is partially encapsulated and somewhat firm in consistency.

In the left cerebellar hemisphere at the level of section A-A in Fig. 1 and about opposite the level of the fourth nerve nucleus, there is a smaller lesion, dark red in colour, measuring .5 by .75 cm. on transverse section (see T. ii. Fig. 3). At this level there is also softening of the lobus centralis in its anterior part, immediately superior to the primary new growth.

Microscopically it appeared to be of the nature of a glio-sarcoma, with a minute secondary growth of the same nature at the higher level in the left hemisphere. The case is of interest in that the progress of the disease can be followed so closely in the clinical history. The lesion was primarily in the inferior vermis and caused no doubt the typical vertigo with the tendency to fall forward and the sensation of the vertical rotation of surrounding objects, and as it increased in size the general signs of intracranial pressure, headache and vomiting. The fits in which he is said to have straightened out are probably the extensor fits of mesencephalic irritation.

The diplopia in the early stage of the disease was, as has been suggested, probably due to the paralysis of the sixth nerve, so common in any case of intracranial tumor.

As the cystic degeneration developed and extended in the neighborhood of the tumor into the right lobe of the cerebellum, we get the history of staggering to the right in walking. The gradual development while in the hospital of the paralysis of the fourth and fifth nerves on the left side, with the inco-ordination on voluntary movement of the left arm, and the peculiar attitude, evidently points to the formation of the secondary lesion in the left hemisphere at the level of the fourth nucleus.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

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THE HOUSING OF INCURABLE TUBERCULOSIS.

It was announced lately that Montreal was on the point of purchasing a building to the north-east of the city, which had formerly been used as a hotel, to be converted into a hospital for the incurable cases of tuberculosis. The price spoken of was a high one: the building had been unsuccessfully offered at a much lower rate some time previously to another buyer, and there was grave ground for suspicion that the affair was being manipulated in the way so familiarly known through the findings of the lately-held Royal Commission. The building was unsuitable, and for all these reasons the project must not be entertained. Nor is the scheme for a hospital that could be used at one time for tuberculosis and at another for small-pox worthy of a moment's consideration. It is doubtful if any project coming from the Council of 1909 would meet with the confidence of the citizens of Montreal.

It is fortunate, we think, that at this juncture there should be brought forward details of a solution of the difficulty which have been long in the minds of those who seriously and practically considered the situation. This view has lately been given publicity in letters from Senator L. J. Forget and Archbishop Bruchesi, and more recently in an interview with Professor J. G. Adami published by THE GAZETTE. Stated briefly, the money available should be voted, so much per week per person, to the sisters of Providence at Notre Dame de Grace, or to the Grace Dart Home, or to any

properly responsible person or society that will undertake the care of these cases. The above-mentioned institutions are at present caring for such cases; some of these are being paid for, and the sum paid is a very small one. Why should the city not avail itself of the services of these "running concerns," if they are willing to do the work? The Sisters of Providence have offered their services, and we believe the Protestant institution, although small, is equally willing; the procedure, if adopted, would then be as follows: every case of incurable tuberculosis, certified both incurable and too poor to care for himself, would be placed in one of these institutions: the city would pay $2.50 per week (the amount asked by the Sisters of Providence) for each person, and these payments would be made by the Civic Board of Control. In all this we see an extremely good bargain for the city, and a home provided for those unfortunates whom of late we have occasionally sent to jail. Speaking for ourselves, we heartily approve the arrangement.

To those who for one reason or another may object to this scheme, one or two observations may be made. If the city attempt to build and equip a hospital for these cases the cost will be so great that, able or not, the city will *not* give the money required, and the thing, if done at all, will be only partly done; and the citizens are properly ashamed that this neglect should go on longer. Words have been bandied long enough over it: here is an opportunity to get something *done*: are we going to do it, or start the ceaseless talk all over again? The greater part of the money will go to a Roman Catholic Institution, and will be paid for Catholics, but a share of it will be paid for Protestants. That there is no idea of "profit" concerned, is guaranteed by two facts—first, the reputation of the order of the Sisters of Providence, and second, that the price asked is far below the cost of the patient who is housed. The Protestant hospitals of this city care for thousands of Catholics yearly: why should not the Catholic institutions be free to do as much? Should Protestants be cared for by the Sisters of Providence, it will be no new thing, and should anyone feel that there is, in this new proposal, any ground for the lack of sectarian tolerance, we would suggest that before anyone voices sentiments on this matter, he should speak about it with some one of the Protestant lady patronesses of the Home for Incurables at Notre Dame de Grace.

In this twentieth century we are so used to looking for motives in everything, and to sell an article for its price, and not less, that there is sure to be some one who will say, "Why are the Sisters of Providence willing to make a bargain on which they will lose money?

There must be some motive behind it?'' This is a perfectly proper question to ask: there *is* a motive behind it. It is the motive which animates the Ladies' Benevolent, the Foundling Hospital, the Brewery Mission, the Salvation Army, and some others: it is the motive that led the questioner, perhaps, last month to be Santa Claus to some poor child.

THE CAMPAIGN AGAINST MALARIA.

A report has recently been issued giving the results of the anti-malarial campaign which has been instituted in Algeria, under the direction of the Sergent brothers, by the French Government. The report gives in detail the results accomplished by the medical men in charge of the campaign in each district. In each locality, particular attention has been given to the anti-malarial measures most suited to it. The canalisation of marshes and the clearing of the beds of streams have been found exceedingly useful in preventing the breeding of mosquitoes; the use of petroleum for oiling breeding places has, of course, been very general; small fish, which feed upon larvæ, have proved useful in freeing from mosquitoes collections of water to which other measures could not be applied. Adult mosquitoes have been destroyed in houses by fumigation.

It is worthy of notice that one medical officer maintains that he has obtained better results in destroying mosquitoes, than can be obtained by burning pyrethrum powder, by insufflating it with blowers such as are used in covering vines with sulphur. In only one or two instances has any effort been made to ensure the health of European colonists through removing their dwelling places from the neighbourhood of native villages, in which, as usual, malaria is always endemic.

The greatest effort of the campaign seems to have been an attempt to "cinchonise" the population by the distribution of free quinine through distributors appointed by the government. The quinine was supplied in sugar-coated bon-bons; in this form, natives and Europeans—both adults and children—were easily persuaded to take it regularly so long as the dose was not too large. The easiest way of giving the quinine was by the daily administration of one bon-bon containing 0.20 grammes (3 grains). Although the persons appointed to administer the quinine, in some instances, made their rounds daily from house to house and although the children in the schools were given the quinine by the teachers, the drug, unfortunately, was not given as regularly as it should have been: in addition, in some localities the supply of

quinine ran out, and therefore it is impossible to draw as definite conclusions from the year's work as might be desired. It is certain, however, that the campaign has been a successful one, and it can be definitely concluded, from the results given, that the daily use of three grains of quinine given preventatively to people who are not suffering from acute attacks of malaria will do much to reduce their susceptibility to the disease.

The continued results of the anti-malarial campaign in Algeria will be followed with the greatest interest because, in Algeria, the French Government are making what is practically the first attempt to effect the colonisation of a tropical country through the employment of the hygienic measures which have resulted from the increase in our knowledge of the causes and means of prevention of tropical diseases. The success with which anti-malarial measures have met at Ismailia and in the Panama Canal Zone leave little doubt that the French Government will meet with complete success in their work in Northern Africa.

THE ORIGIN OF VERTEBRATES.

It is verily about as difficult now-a-days for a student of science who has made a reputation in one of the ' ologies ' to take up another and receive just appreciation for his work from the votaries of that other science, as it is for a camel to pass through the eye of a needle. Such is humanity that "the cobbler must stick to his last," or suffer in consequence. Years ago when Drummond's work upon Science and Religion created wide attention we remember hearing an eminent Anglican divine, ignorant of the author's standing in the Presbyterian communion, give as his opinion that the scientific portions of the work were most valuable and replete with suggestion, but as for the theological acumen displayed, well, the less said about it the better: and a few days later heard a zoologist of high rank, noted for the directness of his remarks, declare that it was a pleasure to come across such sane, broad-minded theology from a parson's pen, but, of course, the science was all adjectivial rot. Those who read the " University Magazine " will recall that lately a like measure of mild contempt was heaped by a clerical writer upon the qualifications of our quondam Professor of Zoology to write on religious subjects, notwithstanding that he is a Scotchman, hailing from the north of Ireland, and the long years during which Dr. McBride has delved into biblical literature are known to all of us in Montreal.

The Origin of Vertebrates. By W. Holbrock Gaskell, M.A., M.D., LL.D. (Edin. and McGill), F.R.S., etc. London and New York: Longmans, Green & Co., 1908.

Thus it has happened that one of the most remarkable pieces of sustained morphological and embryological investigation and of closely reasoned deduction,—the outcome of twenty years of unremitting labour on the part of a leading British man of science, one whom our University has honoured itself in recognizing—has been received coldly and with scant notice by the zoological world—because the man in question is celebrated as a physiologist and is thought to presume when he ventures to attack from a new aspect the good old academic problem of the origin of the vertebrates.

And yet Gaskell came by his problem honestly enough—by a process of natural development from earlier investigations. As he indicates in his modestly written introduction, those studies of his upon the action of the heart, (studies which, by-the-way, introduced, if they did not establish the myogenic theory of heart action and were the first step on the way to a comprehension of the now fashionable 'Heart-block') led him to investigate the characters of the vagus and accelerator nerves of the heart: this led to study of the sympathetic system: led to his establishment of the essential relationships between the sympathetic and the cerebro-spinal system: thence to a study of the structure of the central nervous system in the endeavour to associate the topographical arrangement of cell groups in that system with the outflow of the different kinds of nerve fibres; so to a recognition of the segmental character of the brain, and thence to a comparison between the segmental arrangement of vertebrates and appendiculate invertebrates—crustaceans, insecta, and the like. "There in the infundibulum was the old œsophagus, there in the cranial segmental nerves the infraœsophageal ganglion of the invertebrates, there in the cerebral hemispheres and optic and olfactory nerves the supra-œsophageal ganglia, there in the spinal cord the ventral chain of ganglia. But if the infundibulum was the old œsophagus, what then? The old œsophagus was continuous with and led into the cephalic stomach. What about the infundibulum? It was continuous with and led into the ventricles of the brain, and the whole theory became clear. The ventricles of the brain were the old cephalic stomach, and the canal of the spinal cord the long straight intestine which led originally to the anus, *and still in the vertebrate embryo opens out into anus.*" Here in the opinion of the orthodox zoologist is Gaskell's heresy. The comparison of the infundibulum with the original œsophagus of the appendiculata had long ago been suggested but how could any intermediate form of life possessing one gut proceed to develop a second? "Not having been educated in a morphological laboratory and taught that the

one organ which is homologous throughout the cervical kingdom is the gut, and that, therefore, the gut of the invertebrate ancestor must continue on as the gut of the vertebrate, the conception that the central nervous system has grown round and enclosed the original ancestral gut, and that the vertebrate has found a new gut did not seem so impossible as to prevent my taking it in a working hypothesis and seeing to what it would lead."

And so for twenty years Gaskell has worked accumulating evidence, morphological, embryological, histological, and geological, studying the various stages of development of lower forms of life, and publishing papers one after the other, which have been ignored rather than criticized by the morphologists. Now at last he has brought together all in evidence into a single book of over five hundred pages. We remember some twelve years ago, after Gaskell's Liverpool address before the British Association, hearing a zoologist remark that " of course it is quite impossible: the worst is he exhibits such hellish ingenuity in turning everything to the advantage of his theory," and adding lamely, " One cannot easily criticise him: the subject is so very complicated." That at the time, coming from a well equipped and learned investigator, appeared to us as a confession of weakness.

Reading this collected work, and reading it uncommitted to the traditions of any school, it is not possible to feel other than that Gaskell has fully established his case. There are certain minor matters in which we cannot follow him,—as for example, the homology between, and like origin of, the lymph nodules and the ductless glands; but in its broader aspects, in the remarkable way in which the evidence harmonizes, whether from the point of view of the nervous system and its development in the succession of forms studied, of the skeleton, respiratory apparatus, organ of the lateral line alimentary canal (with the discovery that in ammocætes, at the period of transformation to the adult lamprey, the development of a new gut can be followed step by step), everything " marches." The line of descent is not through the tunicates, or amphioxus or balanoglossus, as one or other school of academic morphologists would hold. A study based more particularly on the nervous system indicates that man has been evolved from the mammal, the mammal from the reptile, the reptile from the amphibian, the amphibian from the fish, the fish through forms allied to the lamprey and the ostracodermi of the Devonian and Silurian seas to forms like that still existing but most ancient type, the Limulus or King crab, and so the arachnid Arthropods, that is to typical invertebrates.

There is, we know full well, a danger ever present to the worker to whom a new hypothesis reveals itself—the danger of obsession: the danger that his views so seize upon him that to him they are infallible and he becomes incapable of weighing deliberately the *pros* and *cons*; nay more than that he becomes impatient of the criticism of others, attributing that to personal animosity. Of such an attitude there is singularly little evidence in the work before us. The danger is fully recognized: opposing views are treated courteously: difficulties are met frankly, and there is evidence that years have been spent in the elucidation of relationships which on their face appeared to negative the theory, each such apparent contradiction being eventually found only the more triumphantly to yield valuable confirmatory evidence. This perhaps is the most striking and most significant outcome of Gaskell's labour.

Reviews and Notices of Books.

Tuberculosis, A Preventable and Curable Disease. Modern Methods for the Solution of the Tuberculosis Problem. By S. Adolphus Knopf, M.D., Professor of Phthisio-therapy at the New York Post Graduate Medical School and Hospital, etc. New York: Moffat, Yard & Company. 1909.

There are few, if any, writers upon Tuberculosis better known than Dr. Knopf, and few men have so consistently devoted themselves to one object as he has. We believe that this is almost the twentieth book of importance that Dr. Knopf has contributed to the literature of this disease, and his best known, Tuberculosis as a Disease of the Masses, has appeared in many different languages. Dr. Knopf may be remembered as having delivered a splendid address in Montreal during the Tuberculosis Exhibition of last year.

The book under review at present is intended for the patient as well as the physician and the anti-tuberculosis worker, and all will find much that is useful in it. It covers a good deal of ground, and while describing the duty of the patient, his friends and his physician, it deals somewhat extensively with the appliances for treatment both at the patient's home and at sanitariums and in shacks. Sanitation and housing and the duties of the municipal and federal authorities towards the tuberculous are dealt with. We can heartily commend Dr. Knopf's book to everyone.

Transactions of the American Urological Association, Vol. I, 1907; Vol. II, 1908.

These two very interesting volumes which have just come before

us have occupied not a few of our spare moments and are well deserving of a more extended review than is here possible.

At the present moment there are two similar associations in the United States—the older body, the American Association of Genito-urinary Surgeons, and the younger American Urological Association, which came into existence in 1902. The papers presented at the meetings of this latter society during the last two years have been collected and printed in these two volumes I and II.

Volume I opens with a short address by the president of the Association for 1906-7, Bransford Lewis of St. Louis, well known as a pioneer in American cystoscopy and the father of not a few instruments. In the two volumes he contributes several papers and his remarks in the various discussions are interesting throughout. Dr. Hugh Young, of Baltimore, presided over the Association during 1907-8, a fact which undoubtedly accounts for the very successful meeting during that year.

Throughout, the papers are as interesting as instructive, and serve to give a clearer insight into the present position of Genito-urinary Surgery in America than is possible from the occasional papers in the surgical journals and the published text-books.

Not the least interesting in this respect is the fact that, throughout the transactions, the very full discussions are published *in extenso*. The value of the papers is thus enormously increased and a true conservative estimate of each is rendered possible.

Among the articles in Volume I we note, the "Advance of Urology," in a paper by Bransford Lewis; "Hæmaturia of Unknown Origin," treated by Hagner; "The Prostate as a seat of Chronic Gonorrhœa," by Wolbarst; "Chyluria from Filariasis," O'Neil. In Volume II Townsend and Valentine treat stricture at length, putting forth a plea for dilatation rather than urethrotomy; Krotoszyner contributes a paper on "Pyelolithotomy vs. Nephrolithotomy; Swinburne discusses the various silver salts. Chute analyses forty cases of renal suppuration, and Barringer in a very complete paper emphazises the importance of urea determination in the separated urines as a means of estimating the functional activity of the kidneys. In short twenty-five papers in all cover most of the genito-urinary field. Most of these deserve more than mere mention.

"Confessions of a Yeoman Prostatectomist," by Rilas Eastman, of Indianapolis, is a most interesting article. The writer does not withhold any of his accidents, yet concludes that the operation has now reached that stage where prostatectomy should be performed as soon as an hypertrophied prostate gives rise to symptoms. The

discussion on this is a very brisk one. Young and Young's operation comes in for thorough discussion, e.g. "When Dr. Young operates on 100 prostates, unselected, without a death we cannot believe him." Nevertheless, in spite of this and more in the same strain, Young is fully vindicated by those who had followed his work and who were glad to be able to do so. Still, another fact of importance brought out here is the recognition of the high incidence of carcinoma in enlarged and troublesome prostates, 6, 10, even 20 per cent as in Young's series. The fact is only now coming home to us.

Lithotomy and litholapaxy come into discussion as is ever the case, with the natural solution that each has its own sphere and that we must select our cases.

A feature which cannot escape one is the fact that the use of the cystoscope and ureteral catheter has advanced enormously: the dissentient voices are no longer heard, and some of the articles serve well to accentuate the advantages obtained and the promises of the future.

On the whole, perhaps, the work does not show the thoroughness in pathological, bacteriological and chemical methods which characterizes European transactions of a similar nature, though, from the standpoint of the practical genito-urinary surgeon, the nature of the papers is eminently useful and important.

In short it is with considerable pleasure that we have read these two volumes of reports and that we look forward to the next series, which promises great things.

R. P. C.

American Practice of Surgery. By Bryant & Buck. Vol. VI. William Wood & Co., New York, 1909.

The present volume of this well-known system of surgery is made notable to us in Montreal by the fact that three of the longer chapters in it are written by Montreal men. Dr. Armstrong has the chapter on diseases and wounds of the mouth, tongue, and salivary glands, Dr. Elder that on the neck, and Dr. Shepherd that on the thyroid and thymus. One can say very justly that the work has gained much by their contributions.

The first chapter of the volume is entitled Prosthesis in its Relation to the Surgery of the Face, Mouth, Jaws, and Nasal and Laryngeal cavities. So far as we know this is the first time in which in a text-book this matter has been adequately discussed and it is indeed a welcome section. Dr. Charles R. Turner of Philadelphia is the writer and he has done it very well. The subject is divided into three sections, the first of which describes the appliances used in

what one might call surgical dentistry, including that of the jaws; the second, those used for the repair of defects of the nose, lips and parts of the face; the third, those for defects of the tongue, and finally the repair of laryngeal defects. That portion which deals with mandibular resections is especially good. The matter which he has brought together here is in most part found only in monographs, and the subject is one of the greatest importance for the general surgeon.

Dr. Harris P. Mosher, of Boston, is responsible for the section on Surgical Diseases and Wounds of the Nasal Cavities and Accessory Sinuses. This section has been dealt with in a very thorough and satisfactory manner. The author discusses first such matters as epistaxis, abscess of the septum and fractures of the nose, and then deals with deformities, under which head the matter of correction of septal deviations is dealt with in detail. The submucous resection is the only method of treatment advised, we think rightly, and is fully described. The section devoted to the diseases of the accessory sinuses has been compiled with care and is richly illustrated with practical drawings and plates, many of them original, others selected from such classical works as those of Killian and Hajek. The section reflects great credit on the author and should form a valuable reference for those interested in the subject.

The following chapter is by Dr. G. E. Armstrong upon Diseases and Injuries of the Mouth, Tongue, and Salivary Glands. It contains 90 pages, of which 70 are devoted to the tongue. One need only say that it is exceedingly well written in an incisive and concise style and bears abundant evidence of the wide experience of the author. Perhaps one of the most important parts of it concerns the excision of the tongue for cancer. Dr. Armstrong's preference is for the Trendelenburg position, for chloroform with the Junker apparatus as the anæsthetic and for preliminary tracheotomy whenever the whole tongue is to be removed. He is in favour of partial removals for unilateral disease and makes a strong appeal for the cultivation of the ability to diagnose the condition in its earliest stages. "Many of us," he says, "were brought up to believe that cancer of the tongue was properly and efficiently treated only when the whole of the tongue had been removed. The new doctrine would seem to be that we must strive to recognise cancer of the tongue when it is small and limited in extent and while it may be sufficiently removed by partial excision of the organ." The illustrations are fairly numerous and very many of them are original. We confess to a general prejudice against coloured plates, having very rarely seen any that were true enough to nature to justify

their expense. The five coloured plates introduced in the present article have not changed our opinion.

The Diseases and Wounds of the Neck are discussed by Dr. Elder and are well and satisfactorily handled. The section on cervical ribs is especially good and contains original illustrations drawn from Dr. Shepherd's collection in the Anatomical Museum. The section also on cut throat is good. One would like perhaps a somewhat fuller statement of the embryological basis of branchiogenetic cysts, one at least which would make the subject a little clearer to the student. But perhaps this is hypercritical. The illustrations are numerous and most of them are original. The skiagram of Dr. C. K. Russel's case of cervical rib is reproduced and shows better than most text-book skiagrams.

The following chapter on the Thyroid and the Thymus Gland by Dr. F. J. Shepherd is, as one would expect, an epitome of the wide experience of one who has long been known in Montreal for his knowledge of goitre.

In the present slightly uncertain state of our knowledge of the pathology of certain forms of goitre Dr. Shepherd is no doubt wise in adopting the classification on clinical considerations. The "vascular" goitres form one group by themselves. Whether such cases deserve a separate classification may possibly be questioned inasmuch as they represent rather a sub-variety of a larger class. With regard to the much mooted subject of Graves' disease Dr. Shepherd remarks in a foot note very justly that "the diagnosis of true Graves' disease differs according to the opinion of the observer. Severe cases can be mistaken by no one. What many surgeons class as 'cases of Graves' disease—those in which there are tachycardia, slight exophthalmos, perhaps some tremor, etc.,—those cases are regarded by the writer as doubtful, and although he has operated on many such they are not included in the twenty-five (personal) cases above mentioned." There can be but small doubt that the rather remarkably large series of cases reported by certain of the American surgeons are to be set down as being due to a laxity of definition as is above suggested by Dr. Shepherd. Dr. Shepherd remarks upon the bad effects of local anæsthesia. He has for some years used a mixture of two parts of ether and one of chloroform and has found it in every respect satisfactory. He reports a very remarkable case of carcinoma of the thyroid in which he ultimately obtained a cure after operating three times. At the last operation "most of the structures at the right side of the neck were removed, namely, the sternomastoid muscle, the jugular vein, the vagus nerve, and the patient has now remained well for six and a half years."

The cure, however, was at the price of myxœdema necessitating the constant use of thyroid extract. With regard to the surgical treatment of the ordinary adenomatous goitre he advocates excision and reserves enucleation for a very limited number of cases, viz., those presenting small adenomatous tumours and single cysts or such as have already one half of the thyroid removed. Secondary hæmorrhage, he says, is the great danger in enucleation. He also very justly emphasizes the great importance of pre-operative laryngoscopic examination.

The thymus gland is given only three pages. One would have liked a somewhat more extensive treatment of Status Lymphaticus for instance, but in a text-book of this sort and in the present state of our knowledge of the thymus gland in its surgical aspects one cannot expect much space to be devoted to it.

The limits of this review will hardly allow any extended description of the subsequent chapters. Suffice it to say that that on the thorax and spinal column by Normal Carson of St. Louis is an excellent and scholarly article with full bibliography attached—a welcome addition which most of the other chapters lack. The chapter on the surgery of the female breast is by Harvey S. Mudd, of St. Louis; that on the external genitals and vagina is by Graves of Boston; that on the male genital organs by Balch of Boston (a very thorough chapter); that on chancroid by Hugh Cabot of Boston, as also that on gonorrhœal urethritis. The last mentioned article is very good, occupying 100 pages and being provided with many excellent illustrations. One of the best chapters in the book is that on the surgical diseases of the jaws by Bloodgood of Baltimore. As one expects of anything coming from Johns Hopkins, it is full and the pathological aspect is given a thorough consideration. It occupies 80 pages and is illustrated by a great number of excellent pictures, perhaps really too many if that be possible. That on page 872 depicting a certain stage in the operation for a temporary resection of both upper jaws seems to the reviewer to show practically nothing.

Taking the book as a whole one may say that it is a very worthy product of American and Canadian Surgery.

E. W. A.

THE PRINCIPLE OF HYGIENE AS APPLIED TO TROPICAL AND SUBTROPICAL CLIMATES. By W. J. R. SIMPSON, M.D., F.R.C.P., D.P.H. Published by John Bale, Sons & Danielsson, London, 1908.

This book is a volume of 296 pages; it contains many illustrations, plans and charts.

In the first chapter a few notes on climate are given in a concise form. The physical conditions existing in the tropical zone are considered, and the measures which it is wise for people living there to take to counteract the effect of these conditions are briefly indicated. The second, third, fourth and fifth chapters are devoted to a consideration of The Water Supply. The author necessarily covers the whole question of water supply in temperate climates, and, in addition, he considers those difficulties in providing for an efficient water supply which are peculiar to the tropics. The vital importance to private individuals of never drinking any water but that which has been boiled or otherwise sterilized is adequately insisted upon. A short review is given of the diseases which are particularly liable to be transmitted by an impure water supply. Chapter V consists of a short review of the methods of examining water.

The next chapters—Chapters VI, VII, VIII, IX and X—are devoted to a consideration of The Food Supply in the tropics. Again the author treats many of the questions ordinarily considered in a work devoted to the hygiene of temperate climates. He gives a mass of exceedingly interesting information concerning the values of the various seed foods used in different parts of the tropics, and the diseases which may be contracted through an unsafe food supply are mentioned. The author rightly insists upon the danger in a warm climate, where ice cannot be obtained, of drinking milk and of eating food which has been cooked for some time and allowed to cool slowly.

Chapter VIII is devoted to a short consideration of the methods of examining milk.

Chapters IX and X give an exhaustive and extremely useful account of the methods of disposing of sewage and refuse. The particulars given for the construction of cheap latrines in small centres of population are especially useful.

Chapter XI on soil and drainage and Chapter XV on the prevention of Malaria might well be considered together. In them may be found a short account of the methods of protecting tropical populations against Malaria.

Chapter XII considers the planning of towns and the building of houses in the tropics. The author rightly insists upon the necessity of straight, broad streets and for the providing for adequate air space around each house.

A chapter on the sanitation of jails, and one on communicable diseases, complete the work. In the latter chapter is given a short account of the means of preventing the transmission of communicable diseases and, consequently, it includes a few notes on quarantine and disinfection.

At the end of the volume are added several charts which will prove useful to students; in them are synopsized the measures employed in preventing some of the communicable diseases most common in the tropics.

The book is an extremely useful one and should certainly be possessed by every medical man who intends to go to the tropics. It is a practical book since it teaches many of those details which are so essential to the successful application of sanitary measures.

The measures which are recommended to the individual who wishes to preserve his health in the tropics are wisely worded. Proper importance is given to the necessity of always drinking boiled water and to the avoidance of warmed-up food and of dishes which have been allowed to become cold. Moderation in eating, in drinking, in work and in exercise are shown to be even more important to persons living in the tropics than to those inhabiting temperate climates.

Many parts of the book—particularly those relating to the disposal of sewage, garbage and refuse and to the laying out of native villages—will be especially valuable to physicians in charge of railroad construction work or mining camps in North America.

J. L. T.

THE PRINCIPLES OF PATHOLOGY. By J. GEORGE ADAMI, M.A., M.D., LL.D., F.R.S., Professor of Pathology in McGill University, and Pathologist to the Royal Victoria Hospital, Montreal; late Fellow of Jesus College, Cambridge, England, and ALBERT G. NICHOLLS, M.A., M.D., D.Sc., F.R.S. (Canada), Assistant Professor of Pathology and Lecturer in Clinical Medicine in McGill University; Outdoor Patient Physician to the Montreal General Hospital; Assistant Physician and Pathologist to the Western Hospital. Volume II. SYSTEMIC PATHOLOGY, with 310 engravings and 15 plates. Lea and Febiger, Philadelphia and New York, 1909.

The first volume of this work was welcomed as an innovation, and this is hardly less so, since it carries out the plan initiated, that is, the laying down of a series of general principles upon which special knowledge may be superposed. This volume, judged merely upon its systemic pathology, apart from the context of the first volume, might be judged to be brief; but the authors explain their point of view, with which we thoroughly agree, viz.: that the purpose of a book upon special pathology is to catalogue some few thousand of the many thousand items which exist, and these the most important; while the principles and the general knowledge are all-important, for upon such general knowledge one can build up the special pathology of any organ for himself. If a knowledge of pathology is to depend

upon the acquisition of a certain number of special pictures of disease, it follows that, other things being equal, the catalogue that is the fullest will be the best, but one such catalogue, fairly made, should suffice. It is common knowledge that there are already too many such. Feeling this, the authors of the present volume, while yielding to the desire that the work should be complete, have made the part dealing with special pathology relatively brief. The present volume, although it contains a thousand pages, includes the pathology of the blood and the circulation, as well as a number of dissertations upon the pathology of function, with the result that, viewed broadly, the entire work is what it claims to be, that is, a book upon the principles of Pathology, and the catalogue part of it is cut down to the practical minimum.

As we pointed out when reviewing the first volume in these columns, the basis of pathological change is rightly sought in the changes undergone by the unit, the cell; and the changes that are directly dependent upon those universally distributed special systems, the blood and the lymph, are as special as are changes in the alveoli of the lung or in the tubule of the kidney. The universal distribution of the blood and the lymph have led to their changes being previously considered under general pathology. The alteration is a good one.

The illustrations are numerous and good: they possess an added interest in that they are nearly all original, being taken from the collection of the McGill University Medical Museum, or of the authors, with occasional ones from those of their colleagues. The least satisfactory, as a whole, are the photo-micrographs, some of which are not sufficiently clear or distinct. It is a very open question whether the photo-micrograph is a good form of illustration, and future editions might be bettered by the substitution of drawings for at least some of these photo-micrographs.

The part devoted to systemic pathology proper is the work of Professor Nicholls, and we congratulate him upon the scholarly additions he has made to the work of the senior author. The references are good, and not bulky. The short general introductions, such as that upon vascular function and upon arterio-sclerosis, are excellent helps to the consideration of the sections: where these are not added, it will be found that the general rules have been laid down in the former volume, with which the present must be constantly associated. There is here completed a work which, in the light of its stimulating presentation of the facts of pathology, has been rightly greeted as unique and of the highest importance to the science.

Diseases of Infants and Children. By Henry Dwight Chapin, A.M., M.D., and Godfrey Roger Pisek, M.D. With 179 illustrations and 11 coloured plates. Published by William Wood & Co., New York. Price $4.50.

The authors' aims have been to produce a thoroughly practical book on the diagnosis and treatment of diseases of infants and children. The theory and pathology, they state, have only been considered in so far as may be necessary to an understanding of the diagnosis, course, and treatment of disease.

The contents of the work are divided into 17 sections. Starting with the Newly-born, in which the authors discuss the care of premature infants as well as injuries during birth and diseases of the newly-born, they proceed, after the Hygiene of Infancy, the Examination of the Sick Child and Infant Feeding, to take up diseases of the special systems in order, including chapters on the Congenital Malformations and Deformities and the commoner surgical diseases.

The section on Infant Feeding is particularly well done, and as one would expect. The so-called biological standard is that followed, the chemical side of the subject being subordinated. As Dr. Chapin states, "a food may be chemically right but practically wrong." "The food elements required by all infants are the same, but the form in which they are presented must be determined for each infant by experiment."

Discussing tuberculosis the authors claim good results from tuberculin treatment, in cases in which there is an absence of temperature and an increase in weight. It seems an open question as to whether it is the tuberculin treatment in such cases which should get the credit of the possible cure.

The chapter on the Disorders of the Urine and Kidneys is also one of the best in the book and well repays study.

The illustrations are few, and in most cases original and extremely satisfactory. The general arrangement, spacing and so forth leaves little to be desired.

The work can be confidently recommended to the busy practitioner as a useful practical manual on the diseases of children.

A Treatise on Zoology, edited by Sir Ray Lankester. First Fascicle of Part I.—Introduction and Protozoa. 296 pages. London: Adam & Charles Black, 1909.

This volume is of especial interest to medical men in so far as it deals with the pathogenic protozoa. In the Introduction, Sir Ray Lankester mentions in a general way the properties of protozoa and refers to the part that some of them play in the production of disease.

The amœbæ are described by Professor Hickson; the mastigophora are described by the same author, in co-operation with Arthur Willey. The hæmoflagellates are, from our point of view, the most important of the pathogenic protozoa described in this fascicle; the other hæmatozoa are described in the second fascicle of this work.

The book is not one which will be useful to the medical man who is interested in the pathogenic protozoa. Although it is dated 1909, it is evident that much of the manuscript of the book was prepared at a considerable earlier period; this is particularly the case with the section (pages 193-273) dealing with the hæmoflagellates. Although there are one or two striking omissions, most of the earlier papers dealing with the parasites have been carefully read and, consequently, this section gives a fair review of what was known of the hæmoflagellates at the time when it was written; unfortunately, later publications make much of it out of date at present. In several places this book shows an unfortunate tendency to mention theories, which are still hypotheses, as though they were proven facts; the offence is aggravated by the proposing, for well-known protozoa, of new classifications based on characteristics dependent upon these unproven theories. Such practices cannot be too deeply deplored because of the inevitable confusion they produce and because of their tendency to mislead those who are not familiar with their subject.

J. L. T.

Atlas of the External Diseases of the Eye for Physicians and Students. By Dr. Richard Greeff, Professor of Ophthalmology in the University of Berlin and Chief of the Royal Ophthalmic Clinic in the Charité Hospital. Only authorized English Translation by P. W. Shedd, M.D., New York. With 84 illustrations in colour from wax models printed on 54 plates with explanatory text. The illustrations are from models in the Pathoplastic Institute in Berlin. Art Director, F. Kolbow. New York, Rebman Company, 1123 Broadway.

In an atlas the plates are naturally of paramount importance, and after examining the eighty-four life-size pictures that Dr. Greeff has chosen as illustrations of the external disease of the eye, we have no hesitation in pronouncing them the best, both in faithfulness to anatomical detail and in artistic finish, that have heretofore been published. The author tells us that for some years he, in conjunction with F. Kolbow, has been making life-masks, and from these wax models, of the more important cases that have come under his care, and when one considers the delicate structure and extreme sensitiveness of the visual organs one can well believe that "the

difficulties to overcome were naturally very great, and only after much experiment were we able to discover the correct method." The plates in the atlas were made by reproducing these models in four colours by a photo-engraving process. In addition to the plates the book contains one hundred and thirty-five pages of explanatory text, in which etiology, diagnosis, prognosis, and treatment are thoroughly discussed.

The translator has done his work well and the press work too is excellent. On the whole it would be hard to commend the book too highly, and we extend our hearty congratulations to Dr. Greeff on the happy outcome of his labours in blending the plastic and the pictorial arts.

G. H. M.

PRACTICAL MEDICINE SERIES, Vol. VIII., THERAPEUTICS, PREVENTIVE MEDICINE AND CLIMATOLOGY. By GEO. F. BUTLER, Ph.G., M.D., HENRY B. FARILL, A.B., M.D., and NORMAL BRIDGE, A.M., M.D.

This is a most up-to-date little volume. The chapter on the therapeutics of drugs and other therapeutic agents, sera, vaccine, and x-ray therapy is concise, and contains all the recent advances. That on preventive medicine, the prevention of contagious and infectious diseases, is followed by a complete discussion of subjects considered from a public health and sanitary standpoint. The chapter on climatology takes up the climatic conditions for the various diseases, life conditions under the various temperatures, acclimatization, climate influencing homicide, and suicide.

A MANUAL OF OTOLOGY. By GORHAM BACON, A.M., M.D., Professor of Otology in the College of Physicians and Surgeons, Columbia University, New York. With an Introductory Chapter by CLARENCE J. BLAKE, M.D., Professor of Otology in the Harvard Medical School, Boston. New (5th) edition, thoroughly revised. 12mo, 500 pages, 147 engravings and 12 plates. Cloth, $2.25, net. Lea and Febiger, Philadelphia and New York, 1909.

This little volume presents much valuable information in a compact and attractive form. It gives one a good general review of the subject and many important principles are illustrated by the use of individual cases from the author's experience.

We were perhaps best pleased by the chapters on the suppurative conditions of the middle ear and its complications.

The description of the operative procedures on and about the

mastoid are clear and comprehensive and much sound advice is given as to when such operations are indicated.

We think more might have been said of the physiology of the vestibular apparatus with advantage.

The subject is now fairly well understood and defined and is of the greatest importance and interest.

There are numerous illustrations which are of the greatest service and are splendidly reproduced.

E. H. W.

Mosquito or Man? The Conquest of the Tropical World. By Sir Rubert Boyce. Published by John Murray, London.

This volume contains 267 pages and many illustrations. The author has had an exceedingly interesting theme for his book; by the way in which it is presented, he has made it an entrancing one.

The author tells the story of the recent advances in our knowledge concerning tropical medicine; he tells it in a manner particularly attractive to those who have not a special knowledge of tropical diseases. The history of the steps which led up to the establishment of Schools of Tropical Medicine and to a wide-spread appreciation of the importance of the diseases of the Tropics is well told.

Each of the more important diseases, Filariasis, Malaria, Sleeping Sickness, Yellow Fever, Tick Fever, Plague, Malta Fever and Ankylostomiasis, are considered in a special chapter. The history of the research work which led to the discoveries through which it became possible to successfully combat each of these diseases is told, and the practical application of the measures through which these diseases are now prevented, or cured, is definitely described.

To those who are interested in the administration of public hygiene in the tropics the book will be especially useful, since it thoroughly describes the personal part which the author took in preventing Yellow Fever in New Orleans and in British Honduras.

In an appendix are contained a series of laws which have been found necessary in tropical countries and which have been enforced recently as a result of the advances in our knowledge of the causation and means of transmission of tropical diseases; those laws which relate to the destruction of mosquitoes are particularly complete.

One of the most interesting chapters of the book describes the work of Dr. Beauperthuy, who, with Colonel Blair, maintained, unheard, long years ago—in 1852—that Yellow Fever was transmitted by mosquitoes. "Mosquito or Man?" tells how completely time has vindicated this opinion.

J. L. T.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF DRS. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

P. L. Friedrich, M.D.: "Thoracic Surgery." Henry H. Janeway, M.D., and Nathan W. Green, M.D.: "Experimental Intrathoracic Esophageal Surgery." Willy Meyer, M.D.: "Pneumectomy with the Aid of Differential Air Pressure: An Experimental Study." *Journal American Medical Association*, Dec. 11, 1909.

Friedrich classifies surgical procedures in pulmonary diseases under four headings. 1. Intrapulmonary interference with diseased foci. 2. Influencing pulmonary affections by way of the pleura by compression of the lung. 3. Operations upon the chest wall for the mechanical influencing of the pulmonary function and thereby reacting on the diseased lung. 4. Operative treatment of the diseases of the thoracic wall itself in as far as this leads to exposure of the lung.

He regards simple intercostal incision as the best method for exploration of and penetration into the lung. By means of the differential pressure apparatus (Sauerbruch) pneumothorax is under complete control, and its development and removal may be used to give one a clearer picture of the diseased area by changing the circulation in the part. Pneumothorax must be regarded as the most important factor in predisposing to infection. In lung injuries he uses the inverted or penetrating sutures, the material being silk. Abscess and gangrene require suturing the live pleural surfaces together to guard against infecting the pleural space, the diseased area being operated upon at once or at a second sitting. Large segments of a lobe or even an entire lobe may be removed. It it remarkable how easily hæmorrhage is controlled either by direct ligature or by acupuncture. In these operations the closing of the bronchus or bronchi form the main difficulty. When the bronchus is devoid of cartilage this may be done by freeing the mucosa and closing by direct ligature and acupuncture. When cartilaginous segments are present, the technique is still unreliable. Here we

may employ Lenhartz's method of elastic ligature of the lobe followed ten days later by ablation of the part; or we may bring the bronchus toward the outside by fixing the lung to the chest wall. Compression of the lung by way of the pleura through introduction of air or nitrogen has been employed with some success in tuberculous disease. The presence of pleuritic adhesions necessarily limits the usefulness of this method. He does not consider it advisable to break up these adhesions by manipulation through an intercostal incision on account of possible serious dangers, as well as the little hope held out for such cases even by direct interference with knife or cautery. Recent empyemas are best treated by puncture with a thick trochar, or small thoracocentesis incision, with immediate drainage according to Thiersch. It is claimed that many empyemas, all metapneumonic cases are cured this way without any further surgical procedure. Resection of a rib or ribs is employed only when the pus focus has been walled off.

Success has followed his procedure of deossification of the chest wall in cavernous and slowly infiltrating non-cavernous phthisis, the majority of cases being essentially improved as regards their general condition, increase in body weight, subsidence of cough, sputum, and fever. These cases must be strictly selected, and only those having unilateral cavernous lesions with passive foci on the other side, and who are free from any recent tuberculous process in any other organ, especially the bowel, should be operated upon. He has obtained brilliant results in primary alveolar emphysema by the removal of pieces of ribs from the second to sixth inclusive. From 4.5 to 6 c.m. at the cartilage-bone margin must be removed, followed by careful ablation of the retrocostal periosteum. The repair of wounds of the heart has been greatly facilitated by the differential pressure method. Nearly all such injuries are associated with a left sided pneumothorax. It has been shown that the hæmorrhage from a cardiac wound is diminished in proportion as the lungs are allowed to collapse, hence during the cardiorrhaphy the pneumothorax is allowed to remain, being definitely removed before the pleura and pericardium are sutured. Exposure of the heart may be secured by an intercostal incision or by removing 10 c.m. of the fifth cartilage. For exposing the anterior mediastinum he advocates a transverse sterno-thoracotomy between the second and third ribs. After bilateral ligature of the mammary artery, the sternum is sawn through with a Gigli saw, and the incision carried transversely outwards into the intercostal muscles. This gives much better access than the longitudinal division of the sternum, and heals more rapidly. Doctors Janeway and Green present their method for circuiting

the cardia by the establishment of an anastomosis between the stomach and œsophagus, and also for resection of a portion of both stomach and œsophagus. Two methods of artificial respiration were used, inflation of lungs through an intubation tube, and a positive pressure cabinet. Each method has definite advantages; with the former an artificial apnœa is developed which abolishes all muscular effort at respiration during operation, while the range of ether administration is greater and the danger of death from too deep narcosis is less. With the cabinet it was found that a smaller amount of ether was required. They have constructed a positive pressure cabinet which practically embraces the advantages of these two methods and which is figured and explained in the text. In performing gastro-œsophageal anastomosis without resection, the eighth rib is resected subperiosteally, the thoracic cavity opened by incision through the periosteal floor, the abdomen entered through the diaphragm and the stomach secured. This organ is now opened and the female half of the anastomosing button secured by purse string. The male portion is passed down the œsophagus and engages the female half, the line of anastomosis being reinforced by a running suture. When resection is performed, the seventh and eighth ribs removed and the thoracic cavity opened through the floor of the seventh. The peritoneal cavity is opened before and behind the stomach, the gastrosplenic and gastrohepatic ligaments ligated and divided, thus allowing a large amount of stomach to be drawn into thoracic cavity. The cardia is divided by cautery between clamps, the œsophageal stump covered with gauze, and the opening into the stomach closed by interrupted Lembert sutures placed over the clamp. This clamp is left in position until all the sutures are in and ready to be tied, when it is released, and the female half of the button dropped into the stomach and the sutures tied. Subsequent procedure for completion of the anastomosis is as for the circuiting operation.

The success of the operation for total extirpation of the lung depends upon the operator's ability to close the divided bronchus air-tight. Various methods have been employed for this purpose, among which may be mentioned the one mass silk ligature around the bronchus and its vessels; amputation, cauterization of the mucosa by pure phenol or Paquelin cautery. Elastic mass ligature around the hilus; removal of lobe at second sitting (Lenhartz). Ligature and division of main bronchus remnant of lung tissue stitched over stump (Garré). Isolation and temporary clamping of bronchus, curetting of the mucosa, tight silk ligature with a second loose cat-gut ligature more centrally around the bronchus (Friedrich). Dr.

Willy Meyer has brought out a new method which is essentially the same as the method now usually followed in performing appendicectomy. Briefly stated, it consists of isolating the bronchus, dividing the accompanying vessels between double ligatures, crushing the division of bronchus proximal to section, ligating and inverting of crushed stump, and burying stump by a top row of sutures. This procedure has given most satisfactory results in his experiments upon lower animals. He reports the construction and employment of a universal differential pressure apparatus, for a full description of which the reader is referred to the text. It consists of two chambers, an inner positive pressure section for the anæsthetist, with an outer negative pressure chamber for the operator and his assistants. By this particular combination of rooms, an operation can be performed under all of the following conditions: under positive differential pressure, under negative differential pressure, under part positive and part negative differential pressure, under a gradual change from positive to negative and vice versa, under a repeated change from positive to negative, and vice versa, under negative differential pressure at an altitude above sea level higher than that of the place where the operation is performed, and at gradually or repeated changes of altitudes.

W. L. B.

Dr. Herman Küttner: "Pressure Difference Operations." *Beiträge zur kl. Chir.*, Band LX, Heft I and II.

In view of the wide discussion of the relative values of negative and positive pressure as aids in carrying out operative measures involving invasion of the thoracic cavity, the observations of Küttner with reports of twenty-one cases are especially instructive. The Breslau Clinic, through the initiative of v. Mikulicz and Sauerbruch, has steadily broadened the field of thoracic surgery. The paper under review narrates without prejudice the experiences of the author in the use of both the Sauerbruch negative pressure chamber and the Brauer positive pressure apparatus. Eleven cases were operated upon with the aid of the former and ten with that of the latter,—the series comprising five tumours of the thoracic wall; three cases of disease of the pleura; six of lung affections, including bronchiectasis, fistula and carcinoma; one retrograde bronchotomy; and six cases of carcinoma of the œsophagus.

While it is true that one-sided pneumothorax may be induced in some individuals without serious symptoms, as the results of Rehn and others prove, the procedure is always dangerous and not infrequently fatal, whereas under pressure difference, whether positive or negative, operative measures upon the thoracic wall and

viscera may be carried out quietly and with a hitherto unsuspected certainty of preserving life.

In intrathoracic surgery, apart from the prevention of lung collapse, success depends upon the maintenance of rigid asepsis. The field of operation is isolated by means of tampons as in abdominal work.

The size of the opening has no bearing upon the subsequent course of the case provided that one secures primary and absolute closure. Suture of the divided parietal pleura is generally not possible, and reliance is placed chiefly upon the approximation of the muscular coverings. In his most recent experimental work upon animals Sauerbruch has adopted a pericostal stitch where intrathoracic manipulations are carried out through rib separation instead of resection—this method of closure being especially suitable in young subjects. Where muscular elements are removed with a rib tumour, a cutaneous flap alone may be rendered air-tight by reinforcing the line of interrupted sutures with a continuous stitch of fine silk running close to the edges of the wound. Where the skin has also to be widely removed with the underlying muscles, tumour and ribs, the visceral pleura may be stitched to the margins of the thoracic defect.

In considering the technique of long suture, Küttner has found that the actual suture of all small wounds of the lung with fine silk is to be preferred to the method of Tiegel, who relies upon the application of styptics (chloride of iron) or the mixture of fibrin ferment solution with one per cent calcium chloride recommended by Wright. Fine silk is to be preferred to catgut. The needle should be inserted near the margin of the lung wound and, where possible, carried around the closed angle before emerging upon the opposite side. Lung tissue in the human subject is much more resistant than is generally supposed, and it is quite possible to catch and tie the vessels in a large incision surface without difficulty. A special pleural stitch is not recommended by the author as it tears more easily than one which includes the underlying lung parenchyma. Only in superficial tears does the single pleural suture come into consideration. While air beads invariably escape from the suture tract, the closure is always sufficiently tight to prevent the development of pneumothorax owing to the rapid formation of adhesions. Küttner considers that all complicated lung-suture methods, as for example the scaffold stitch (Gerüstnaht) of Tiegel, are superfluous.

In considering the value of pressure difference methods in general, the writer is convinced that their introduction has marked a great advance in pulmonary surgery. Küttner feels that he is able to open the thorax with as much confidence as if he were performing

a laparotomy. Never has he observed any change in the condition of the patient even on the sudden opening of the pleural cavity to the extent of twenty centimetres and more, as is necessary in œsophageal operations. The objection urged especially against the use of positive pressure, that it favours aspiration, is not supported by the author. Küttner, however, employs the assistance of skilled anæsthetists only, and in cases of bronchiectasis and lung abscess takes the preliminary precaution of emptying the cavities, as far as possible, by posture. An interesting observation of the author is that in perforating bullet wounds and in the separation of adhesions where there is escape of air, collapse of the lung does not take place. Even the opening of the larger bronchi does not result in collapse.

In the selection of an apparatus Küttner finds that positive and negative pressure are equally valuable. Personally, however, Küttner prefers the positive pressure apparatus of Brauer for the reasons that the surgeon operates under normal conditions, that contact with the anæsthetist is more direct, and that asepsis may be more easily maintained: in the words of the author—"it is most striking that with both methods at our disposal we give the preference spontaneously to positive pressure." With the apparatus of Brauer, too, must be noted the possibility of rapidly changing the pressure, which is a decided advantage, not only on account of the prompt and desirable effect which sudden increase of pressure has upon the pulse, but also in the localization of foreign bodies or diseased areas, as collapse may be permitted without danger if one has certain means of restoring promptly the intrapulmonic pressure. With regard to the Sauerbruch chamber Küttner states that although he has never been handicapped by the negative pressure and the heat, the separation from the anæsthetist is a great disadvantage. In narcotic complications the presence of a third person is necessary at the telephone to keep the surgeon and the anæsthetist in touch. Moreover the anæsthetist is frequently unable to observe the respirations of the patient owing to the dimming of the windows.

Küttner has almost constantly used ether. In the two cases of aspiration pneumonia mentioned in his paper chloroform was the anæsthetic employed. Another point in favor of the Brauer apparatus is that under positive pressure oxygen may at any moment be given.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

GEORGE FETTEROLF, M.D.: "The Anatomic Explanation of the greater amount of vocal fremitus and vocal resonance normally found at the apex of the right Lung." *American Archives of Medicine*, 1909.

The first part of this article is concerned with the historical consideration of the above conditions, and quotations of authorities. In the second division one's attention is directed to the anatomic considerations already referred to in the quotations made. Here the author considers the course of the trachea and its relations and bifurcation, the caliber of the bronchi, the angle of origin of the bronchi and the length of the bronchi, as well as their direction. He confirms the observations of others, that there is a difference in the caliber, the right being wider than the left; that the angle of the right bronchus is about 25 degrees and that of left bronchus about 45 degrees with the body axis, and that there is a slight difference in the length of the two bronchi. The third division of his paper contains a discussion of the accepted explanations of this difference between the two apices of the lung, which may be briefly reviewed. There are three of these, one being the more direct continuation of the right bronchus in the line of the trachea; another the shorter distance from the bifurcation of the trachea to the right apex, and the third the greater caliber of the right bronchus.

With the first the author does not agree; he contends that what is lost at the bifurcation of the trachea is gained further on at the subsequent branchings of the bronchial system, for he says that reduced to the last analysis, vocal sound waves transmitted by the air current to the apex must pass through an angle of 180 degrees; they must pass down, they must pass laterally, they must pass up. This truth applies with equal force to both sides. With the left system of tubes 45 of the 180 degrees are subtracted at once, while on the right side 25 degrees from the 180 are subtracted at once, leaving in the former instance 135 degrees as opposed to 150 degrees in the latter to be travelled in order to reach the apex.

Regarding the theory based upon distance from the bifurcation of the trachea to the apex, the writer admits that there is a shorter distance on the right than on the left, but he is not inclined to consider this difference to be so great as the accepted figures would incline us to think. Two mm. only, was found as the difference between the two sides as measured by Fetterolf. He contends that the two and half inches difference between the origin of the upper lobe bronchi seems to be

excessive, but granting that it is correct the writer points out that the lower position of the left summit would subtract considerably from the two and a half inches. Making all necessary deductions due to the length of the bronchi and the different levels of the apices it would appear that about 25 to 30 mm. was the measure of the difference through which sound waves would have to travel in the two lungs. The writer claims that it does not seem possible for two to three cm. of distance to make so great a difference as is normally found, as in our stethoscopes a shortening or lengthening of the rubber tube even to many inches seems to have no effect on the clearness or intensity of the sound transmitted.

The explanation based upon the difference in caliber in the two bronchi is no more acceptable to Fetterolf. He argues that while this may be responsible to some slight degree, it cannot markedly influence the condition. Since the right bronchus is wider than the left bronchus and supplies a lung more voluminous than the left lung, the question is asked "would not the greater facility with which the sound waves are transmitted to the right bronchus be later lost at the apex on account of the greater area of peripheral area of pulmonary tissue to which these waves have to be distributed?"

The last paragraph deals with the author's explanation of the difference found in fremitus and resonance at the pulmonary apices. He points out that it has been assumed that the vibrations responsible for fremitus and vocal resonance are transmitted from the larynx solely by the bronchial and pulmonary air. The explanation here presented is that direct transmission of vocal vibrations from the trachea through the tissues of the superior mediastinum to the lung apices accounts for the difference, and the author supports this view by first pointing out that if the other theories are true the vibrations are transmitted against the air current in almost every instance. Again, the trachea in its thoracic course lies in contact with the lung on the right side, while on the left side there are three cm. or more of large blood vessels and œsophagus plus areolar and lymphatic tissue interposed between it and the apex.

Fetterolf and Landis: "Compression of the Pulmonary Veins the pressure factor in the etiology of Cardiac Hydrothorax." *Am. Jour. of Med. Sciences*, 1909.

The pressure factor in the etiology of cardiac hydrothorax has been hitherto considered as influencing the azygos major vein, either by direct compression of a dilated right heart, chiefly the auricle (Steele and Stengel), or by dragging the vena cava downward, and with it the azygos vein, drawing it tightly around the root of the lung and

thus compressing it. Hydrothorax thus explained implies that the pleura is drained altogether by the azygos veins and their tributaries and that the radicles of these veins have but few anastomoses. This paper contains several objections to this view and they may be briefly recalled:

(1) Only about two-thirds of the parietal membrane is drained by the azygos veins; (2) the collateral anastomoses of the azygos veins are so free and so numerous that, in the event of pressure, competent by-paths would soon be established and carry away any excess of fluid in the azygos radicles; (3) the vena azygos minor, emptying into the major, is subject to the same influences as the latter, and therefore the effusion should always be bilateral; (4) it is anatomically impossible for the heart, either directly or indirectly, to exert pressure upon the azygos major vein; (5) it does not explain purely left sided effusions.

Of these five it would appear that possibly the fourth is the most important in view of theories already quoted. By frozen sections and examination of organs *in situ*, these investigators demonstrate the truth of the fourth objection, and at the same time point out the untrustworthiness of the observations made where it was contended that the azygos vein was dilated through compression. The authors' explanation is an effort to show that the fluid comes from the visceral pleura and not from the parietal pleura, and the outpouring is caused, so far as the pressure factor is concerned, by dilated portions of the heart pressing on and partly occluding the pulmonary veins. They hold that the points in favor of their theory are that it explains equally well right-sided and left-sided and bilateral collections of fluid, and it also accounts for some intrapulmonary conditions found clinically and post-mortem in association with hydrothorax. An abstract of this paper can do but little more than state the facts set forth by the authors, but a careful study of their thoracic sections well repays the effort and the time and carries considerable conviction with it,

Greater frequency on the right side is due to the fact that dilatation of the right auricle is more common and more easy than a similar condition of the left side, and such dilatation is the only factor needed to cause damming back in the right pulmonary vein. On the left side in order to include both upper and lower veins there is needed dilatation of the left appendix and of the left ventricle, with possibly a retro-displacement of the ventricle septum or vena-appendicular septum—three factors as against one on the right side.

W. F. H.

KING AND STEWART: "Effect of the injection of Bile on the Circulation." *Jour. of Exp. Med.*, Vol. 11, Sept., 1909.

These experimenters worked with pigs' bile injecting intravenously into circulation of dogs. The bile was a mixed sample taken from at least 20 pigs, in order to avoid the possibility of individual variations. The conclusions which are reached in this study are as follows:

(1) We have confirmed previous work which shows that the injection of bile increases the tone of the vagus nerve, and that this action can be abolished after the administration of atropine.

(2) We have found that the amount of bile salts in a lethal dose in pigs' bile for dogs will, if injected alone, produce neither a fall in blood pressure nor a slowing in rate.

(3) We have found that the amount of pigment in a lethal dose of the bile will, if injected alone, cause death with slowing of the heart and lowering of blood pressure.

(4) We have found that the bile pigment in combination with calcium or sodium is less toxic than uncombined pigment.

(5) We have found that in experimentally produced jaundice the calcium content of the blood is increased, while that of the liver muscle and brain are decreased.

(6) We are of the opinion that increase in calcium in the blood is a protective mechanism against the circulating pigments of obstructive jaundice.

W. F. H.

Medical News.

THE OTTAWA MEDICO-CHIRURGICAL SOCIETY.

A regular meeting of the Ottawa Medico-Chirurgical Society was held on Friday evening in the Carnegie Library.

1. Paper—Forms of Nasal Obstruction.—Dr. J. D. Courtenay. (Discussed by Drs. Minns, Hackney and Emery.)

2. Notes on Dr. Sydenham's Practice of Medicine. Dr. H. B. Small.

3. A Method of Administering the Pasteur Treatment for Rabies. —Dr. C. H. Higgins.

4. Report of a Case of Fracture of the Os Calcis, recognized only by X-ray.—Dr. Campbell Laidlaw.

5. A Report of a Case Having Temporary Paralysis.—Dr. McK. Bell.

6. Specimens of (a) Endothelioma showing Giant Cells.—(b) Blood from a Case of Myelogenous Leukæmia, the Leukocytes being 300,000. (c) Typical Carcinoma of Breast.—Dr. F. W. C. Mohr.

Dr. T. K. M. Siao, secretary Imp. Chinese Consulate General, was elected an honorary member.

Dr. Nelson and Dr. Kearns were proposed as Associate Members.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held Friday evening, November 5th, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: EXCISION OF THE ASTRAGALUS

J. M. Elder, M.D. This case, of which I wish to give you just a brief note, is a man aged 23 years, who fell on the 4th of September last from a height of 12 feet from the cornice of a roof, his weight coming down mostly on one foot. He was brought to hospital and a compound dislocation of the ankle discovered. The external malleolus was sticking out through the wound in the skin, and the foot was inverted. Upon enlarging this wound, with a view to cleaning it out and seeing the condition of the joint there, I found the astragalus in two pieces as the accompanying specimen shows. This is the more common fracture of the astragalus, that is, fracture of the neck from the body. The neck was completely turned round and out of place.

Profiting by the experience of my colleague and teacher, Dr. Shepherd, who had, I remembered very well, one case in which he had excised both astragali in a woman with excellent results, and knowing also that after replacement of the fragments in other cases they have generally resulted in ankylosis of the joint, I here removed the pieces through the wound and irrigated thoroughly, packed it with gauze and left it for a few days. The wound healed without incident and the patient left the hospital in about two weeks, and began to walk in six weeks, and for the past two weeks has been working at his trade as a joiner. As you see, he still is a little lame, but that will improve, and he really has a very useful ankle and foot.

Fracture of the astragalus, as far as the literature goes, has only comparatively recently been seriously considered, e.g. up to 1894 there were only 36 cases reported. But, as the writers say, since the introduction of X-rays, undoubtedly there are many more cases recognised. Many cases of so-called "bad sprain" must have been undoubtedly fractures of the astragalus. My practice in all such cases as the present would be to excise the astragalus. I do not think it is good practice to leave the fragments, no matter how exactly they may be replaced, for it has generally ended by necessitating excision to prevent a permanently stiff joint. With removal, the results are so good that I would practise it in every case. Von Bergmann cites a very interesting case where he got the fractured frag-

ments into perfect position, but six weeks later had to remove the astragalus in order to give the man a movable ankle joint.

CASE OF MICROPHTHALMUS.

Gordon M. Byers, M.D., read the report of this case.

J. W. Stirling, M.D. These cases are very interesting and are generally associated with defects elsewhere, it may be polydactylism, and it would be interesting to know if there are any other defects about this case. I have a case just now which I intend to bring before the Society, of Microphthalmus and congenital cyst.

G. M. Byers, M.D. There were no other defects.

PATHOLOGICAL SPECIMENS: CARCINOMA OF THE ASCENDING COLON.

G. E. Armstrong, M.D. I removed this mass of malignant disease from a woman aged 61 years. She was considerably emaciated and gave a history of suffering more or less from distress in the region of the tumour for a period of two years. In January last the first symptoms of intestinal obstruction developed and she describes very clearly the filling of the ascending colon and its gradual disappearance with gurgling. In July last, the tumour became palpable, the attacks of painful peristalsis became more frequent and the toxæmia from obstruction became apparent about this time. The tumour was unusually large and more fixed than usual, and before operation my idea was that probably I would be able to short-circuit the growth and relieve her of the obstruction. Her general condition did not justify one in attempting a large operation. Her red cells were less than three million and the hæmoglobin on two occasions was not over 50 per cent. On exposing the tumour it was found fairly movable in front and there were very few enlarged, palpable or visible glands, but on getting about it more, it was found that the right kidney was involved in the mass. It became a question of short-circuiting or removing the whole thing by a rather extensive operation. The left kindey was present and felt large, probably from hypertrophy from doing the extra work. The tumour seemed movable and did not present very great difficulty, and by tying the vessels before I divided them I was enabled to remove the lower part of the ilium, the cæcum and the ascending colon, the tumour and part of the transverse colon and the right kidney all in one mass. I then closed both ends of the open bowel and put the ilium onto the remaining part of the transverse colon by lateral anastomosis. That was two weeks ago and she has made a very smooth recovery and now seems to be all right.

The interest in this case is the unusual involvement of the kidney. I may say that these colon tumours are very favourable for operation.

They, of course, are not uncommon and are very slow growing as a rule, and the results obtained after the removal of these tumours are often very satisfactory. Personally, I have cases living eight and ten years after resection and in perfect health without recurrence.

CLIMACTERIC HÆMORRHAGES.

J. R. Goodall, M.D., read the paper of the evening.

A. Lapthorn Smith, M.D. I have very little criticism to make on the paper. The facts are all right but I would like to differ with the author as to the title of the paper. "Climacteric hæmorrhage" is in my mind a misnomer, for there is no such thing as climacteric hæmorrhage. My objection to this title is really in the interests of gynæcology, for it has been a misfortune that for 50 or 100 years back, people, and especially women, have thought that it is a natural thing to have hæmorrhages at about 40 or 45 years of age; and to my knowledge, hundreds of women who have died from cancer would not have died from cancer it they had not had the idea that these hæmorrhages were natural. I have a number of young friends who are trained to suspect cancer when there is a climacteric hæmorrhage, and not long ago one of them called me in consultation in just such a case. I operated on that lady the next day at the Samaritan Hospital and took that uterus out because I thought it was cancerous. Her periods had almost stopped at 43 but became profuse again at 45. When that uterus was taken out it was cut in two, and there was seen a furious epithelioma going on in the cornua. That woman's life was saved. Another case occurred in the same way. I operated two days later although nothing was to be seen on the cervix. But the symptoms were enough to make me suspect cancer of the uterus; so large and hard was it, that I removed it without any risk to the woman. If you do not wait till it has got beyond the uterus there is no risk from the operation. That uterus when cut open was found to be invaded with cancer beginning in the mucous membrane and almost going through the wall of the uterus just between the internal and external os. That woman is also alive. Another case in the Western Hospital occurred this summer of a woman aged 50 who was having more and more hæmorrhage every month, "climacteric hæmorrhages." I curetted her and submitted the curettings to Dr. Nicholls who said that he suspected cancer, and one of my theories is that if you suspect cancer in this region get the suspected growth out, do not wait till you are sure; the time to get out cancer is when you suspect it. On the strength of Dr. Nicholls' report I removed the uterus and that woman got over the operation easily and she

is very well now. Perhaps I did wrong to act so promptly but I do not think so. I have not had the scientific training which the learned author possesses, but, as one of the younger members said to me a few days ago, a pound of experience and a pound of high science mixed together would make a very good working formula, and that is one of the advantages of these meetings, you get the experience of the older men and the high scientific spirit of the younger ones. Let me explain how these hæmorrhages come. The author has mentioned everything, only to my mind he has not got the facts into right line. The way I see it is that first there is a lacerated cervix (you should hurry up and find this out); this prevents that wonderful process of nature called subinvolution which changes the muscles into fat and carries it away; with a lacerated cervix this does not occur, and the uterus falls back and blocks the uterine veins; this causes a back flow of the blood just as you get a varicose condition of the legs from wearing tight garters. Over and over again I have curetted these women and got away a thick mucous membrane full of varicose veins, and following this curetting she is cured provided the uterus is fixed up. Now and then there is a case where the curetting does not cure, but if it is well done and there is no cancer it ought to cure or greatly improve the condition. If the uterus is curetted thoroughly, passing over the whole surface three or four times and iodine and carbolic applied, this condition will clear up. By leaving in iodoform gauze packing for five days it sets up contractions of the uterus which closes the veins. The muscles are transverse in every direction and the vessels which pass through them are closed up by that. Dilatation, curetting, repair of the cervix and ventro-fixation can be performed at the same time.

The doctor has done well to speak of miscarriages as a factor in menorrhagia. In looking over my note books, constantly the patient says, "I have never been well since a miscarriage five, ten or fifteen years ago. Most women and some doctors think a miscarriage a small affair, but it breaks down the health more than half a dozen births at full time. There is a certain kind of endometritis which is not cured by one curetting but is sometimes cured by two. I have only seen four or five cases in which the curetting did not cure non-cancerous hæmorrhage and they were in cases where there was disease of the arteries, and in my old books on gynæcology this is mentioned. In those cases there is only one thing to do and that is hysterectomy. Another point is with regard to the uteri the doctor has shown; I would say that they are young fibroids caught at the right time. When you cut out a fibroid uterus

you will find that the bleeding area is multiplied ten or twenty times. The earlier fibroids are removed the safer and better.

F. A. L. Lockhart, M.D. The Society is to be congratulated in having presented before it this evening such a scientific treatise as Dr. Goodall has given us. It has been intensely interesting to me and I am sure it has to every member present. I am sorry that Dr. Goodall did not do as Dr. Smith suggests, and that is lay more stress upon the question of carcinoma. To begin with I think we might antedate the onset of chronic metritis by at least five years. We come across quite a large number of cases of this condition from the age of 30 on, and of course we do come across cases before that, due undoubtedly to abortions and to unrepaired lacerations of the cervix preventing proper involution. I do not doubt but that this last is the more frequent cause of this condition of chronic metritis. I think that we cannot emphasize too strongly the difficulty of diagnosing cases of hæmorrhage about the climacterium. I do not know any class of cases which gives one more worry than the case of a woman losing more and more blood at each period and sometimes losing a certain amount in between the periods. There are so many causes, and carcinoma is one, that it puts the clinician in a difficult position to make a diagnosis. Of course the best thing to do is to curette and then act upon the advice of the pathologist. If he says that the scrapings are suspicious, we ought to treat the case as one of carcinoma and remove the uterus; if he says undoubtedly the condition is due to inflammation or hypertrophy of the endometrium, then of course the curettage ought to cure the condition. As to the source of the hæmorrhage in these cases of chronic metritis, I do not think there is any one at all who will dispute the contention that the hæmorrhage comes from the uterus itself and has very little dependence upon the ovaries. I have removed these and in some instances it has ceased, and in some not only the uterus was removed but the ovaries as well, and always in these cases where we remove the ovaries curettage is done at the same time and it may well be that this last cured the condition. In very many instances the hæmorrhage does not cease because we still have a disease of the arterioles and arteries in the actual uterus itself. The strictly histological aspect I confess I am not qualified to discuss with Dr. Goodall, and I must say that I am very grateful to him for this paper to-night.

D. J. Evans, M.D. Dr. Goodall's most excellent paper has thrown a great deal of light on what has been to me a very dark and intricate subject, and I am very grateful to the writer of the paper for clearing up many matters in connection with the subject that have been

for some time troubling me. I had occasion not long ago to look up this subject and found it difficult to understand just how vessels of the pregnant uterus involuted and returned to their ordinary calibre. To-night I feel as though I had begun to see light.

I feel I am incompetent to criticise such a paper, but I think the author's findings, if correct, must add not a little to the burden of the obstetrician, as it must be apparent that upon him devolves the responsibility of seeing that uterine involution is completed.

I would like to express my belief that Dr. Goodall is probably correct in what he says about lack of involution being responsible for these hæmorrhages, for if one thinks back over one's work, one can find many things off-hand which bear out his theory.

One might ask the question, If after a subinvolution has existed for some time may not another pregnancy act as a curative agent by again stimulating the whole structure so that subsequently complete involution may follow the delivery? I think I have had such experiences and would like to ask the author if such is not the case.

W. W. Chipman, M.D. I hope we are not unduly prolonging the discussion on this paper but it is a very interesting one at least to us in the department of gynæcology. Dr. Goodall has been working in Germany for the last 18 months, and we have been interested in the work that he has been doing, and confident of the result he would obtain, knowing the man and the conscientious kind of work he has been accustomed to do. I may say that when he returned with the fruit of his labours that that confidence was amply justified. I have had the good fortune to go over some of the work with him and to see his slides, and really they show very clearly and very beautifully the changes which he has spoken of to-night. Of course the subject itself, this subject of chronic metritis, fibrosis uteri, or subinvolution, is an extremely difficult one, and very few authors are agreed at all upon the matter. The trouble heretofore has been this, that for the most part these observers have not examined specimens enough, they have not examined the whole life history of the uterus; that whole question of the life history of the uterus has not been sufficiently brought into prominence. They have examined one phase of that life history and one phase only, and then have drawn general conclusions. One of the chief virtues of Dr. Goodall's work has been its thoroughness and its extent. He has taken the whole history of the uterus from its early to its late stages. It is the study of all these stages, the adolescent, the mature, and the senile, that gives a perspective, something definite, something fundamental to work from. In this way the work attains a true scientific value.

I sympathise a little with the author of the paper in the matter of his title, and can see the difficulty of selecting a title. As I understand, the paper is not an attempt to give a classic exposition of climacteric hæmorrhage; of course no attempt was made to cover such a theme as carcinoma of the cervix or of the body. It is a very difficult subject really to name for the reason that really very few are agreed at all upon the pathology of the condition. To come back again to the pathological side of the question. As we know, the uterus is a rather singular organ, subject to intermittent strain during its life—the intermittent strain of the menstrual cycle and of pregnancy and labour. It is only to be expected that the vascular change consequent upon this intermittent strain would be clear and conspicuous. These changes Dr. Goodall has carefully followed out, and the use of the Weigert stain has been very satisfactory in his hands. You all know the microscopic appearance of the wall of the ordinary parous uterus, how the vessels possess thick swollen walls. When stained with eosin this wall appears as a pink homogeneous zone with little or no distinct cell structure. Heretofore we have spoken of this as a hyaline degeneration of the musculo-fibrous wall of that vessel. Now Dr. Goodall says that this wall is due to the swollen elastica interna, and that really we are looking at elastic tissue. Accordingly this is a distinct addition to the pathology of the uterine wall. This elastic tissue is obtained both in the wall of the vessel, and also in the musculo-fibrous wall of the uterus itself. He has worked this out in different conditions and has traced it very particularly here to-night. You can as a result clearly see how the term Chronic Metritis is a misleading one because after all it may not be, indeed is not, an inflammatory condition at all, for it is simply the fact that this elastic tissue in the walls of the vessels has not been sufficiently absorbed; that the absorption of the old walls, the walls of the large vessels of pregnancy, has not been sufficiently carried out. A good deal of stress has been laid on a torn cervix uteri as an ætiological factor in this condition. My own conception of the etiology of such conditions is this, that a torn cervix leads to a certain amount of septic absorption, and it is this septic absorption which leads to the subinvolution, the Chronic Metritis. If this absorption had ceased, and frequently it has ceased in the old tears, why then the mere repair of an old tear will do little to prevent the subinvolution. I feel certainly like congratulating Dr. Goodall upon his work, and also feel proud that this work has come from the department of gynæcology, and I also feel like congratulating the Society upon this addition to its noted papers.

Wesley Mills, M.D. The more one is conversant with the latest

principles of modern biology the more he will see how remarkably scientific a paper we have had. I would especially call the attention of the Society to the recent Lowell Lectures by Professor Minot of Harvard. These lectures have been published in the "Popular Science Monthly" of last year, and they are upon the subject of Age, Growth and Development, Rejuvenation and Decay. When one reads these admirable lectures and then heard Dr. Goodall's paper he must realise how in detail this pathology fits in with this most recent biology as set forth by Professor Minot and others. It seems to me that Dr. Goodall has been intent on showing us the anatomical grounds for hæmorrhage and Dr. Smith would rather lay stress on its physiological aspects. If Dr. Goodall has done no more than simply present the pathology of this subject he would have given us one of the most scientific papers that has ever been presented to this Society since I have been a member of it. Dr. Chipman's view appeals to me—that it would be better not to refer to this condition as an inflammation but as a failure of involution, as a defect in a part of the cycle that Dr. Chipman has so illuminatingly referred to. Perhaps I may be permitted the gratification of expressing my satisfaction as one who had at one time some little to do with Dr. Goodall when he was a student. I think I see evolution and no failure in him.

J. C. Cameron, M.D. The full significance of this paper cannot be grasped in one evening, it will need time for thought and study. I am sure that then a good many old cherished theories will have to be modified, that many dark places will be illumined, and perhaps many doubtful perplexing cases will be cleared up and a rational explanation given of them. From a practical point of view, this paper has appealed to me very strongly; it has emphasized the great burden which we as teachers of obstetrics have to bear, and the responsibility resting upon us. We should insist even more strongly than we have been accustomed to do, upon the great and far-reaching effects of subinvolution, and also upon the grave pathological significance of early abortion and repeated abortions, facts which by the general profession are not sufficiently realised. And for all of us as practitioners it has a great and wholesome message, namely, that our responsibilities in attending a woman in confinement do not end when we have paid her a last visit on the tenth day. We have not done our duty by her if we dismiss her without having made sure that involution is complete. We should foresee the possible complications of a later date and try to guard against them. With regard to early abortions and repeated abortions, we should not regard them as lightly as we are too often inclined to do, but must

remember the possible and probable after-effects. If there is one thing more than another which experience brings home to me more and more, it is that practitioners do not give sufficient care to cases of abortion. I am quite sure that if we would revise our ideas respecting subinvolution and abortion, there would be fewer cases of chronic metritis.

J. R. Goodall, M.D. There are only two points to which I have to reply and that is Dr. Evans' question as to whether a subsequent pregnancy will relieve the woman of a chronic metritis. I think that question can be answered most emphatically in the affirmative. After a woman has been delivered of a child and has suffered from some infection that will not affect subsequent pregnancies but which has left the uterus in a condition of chronic subinvolution, if her next pregnancy and puerperium are normal her uterus will return to the normal, just as a fibroid of the uterus may be absorbed after a pregnancy. As to the question of the title of the paper, I debated a long time on this. I think a new term should be introduced in the gynæcological text books to denote this disease. Considering the etiology of chronic metritis, the name that appeals to me most is "Chronic Subinvolution," which term not only defines its etiology, but also eliminates the idea of inflammation, which, as we know, is very frequently not present at all, but which would be implied in the name "chronic metritis".

TETANY OCCURRING DURING OPERATION UPON THE STOMACH.

A. E. Garrow, M.D.

Wesley Mills, M.D. The question as to the causation of tetany is an interesting one. I think it is pretty well known that the nerves are in an irritable condition, that is they respond to various kinds of stimuli very readily. Experiments throw perhaps some light on this question. It was early observed when the thyroid began to be removed experimentally that some of the animals developed tetany. I made some experiments at that time and most of the dogs and all the cats did die in a condition of unusual muscular excitability, and prior to death they had developed tetanic symptoms. This condition was then believed to be due to changes in the metabolism of the body owing to removal of the thyroid. I think since then it has been thought to be really due to removal of the parathyroid, which in these animals is present with the thyroid. Now the question is: Is the immediate cause of the tetany the condition of the nerves or of the centres? The professor of the Diseases of Children in Leipzig was the first to make experiments on the cortex of newly-born animals. I took up that work and extended it to different kinds of animals, and at the same time studied

the mental development of these young animals. Now, as was pointed out by my predecessor in this research, in the animals that are born in a very defective condition, blind and deaf for example, the cortex does not respond to electrical stimulation, and Fleischig has since shown that myelinization of the brain is very incomplete at birth, so that the infant's brain is at birth an imperfect one. What I would like to know is if a young child, say less than a month old, can have tetany. If he can, then it cannot be an affection of the centres, but the immediate cause must be a condition of the peripheral nerves, if we are correct in referring the condition to the nervous system at all.

D. J. Evans, M.D. I have never seen a case of tetany in an infant under a month old.

The fourth regular meeting of the Society was held Friday evening, November 19th, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: RADICAL MASTOID OPERATION.

W. H. Jamieson, M.D., and E. H. White, M.D.

G. H. Mathewson, M.D. I also would like to congratulate our colleagues of the Royal Victoria Hospital and to point out the excellence of the scar behind the ear which results from the fact that now-a-days we do not leave the skin incision half open as was done previously, and is still done on the Continent, but sew it up completely and treat the wound through the external auditory meatus. The result is that you get a nice clean scar and have all the drainage you need through the external auditory meatus.

I exhibited two cases some years ago. In one I removed the matrix and in the other I did not. One case had shown prominent labyrinthine symptoms and in that case I removed the matrix. In these operations one cannot go too deep, and I simply curetted the place where this cholesteatoma was lying and got as much of the matrix as I could. I also did skin grafting in this case, which did not take very well though the ultimate result was excellent.

R. H. Craig, M.D. I wish to congratulate Drs. White and Jamieson upon the successful result of their cases. I did my first radical operation upon the ear nine years ago, and placed it on record before the members of this Society. I have had the opportunity of doing many radical operations since that time, but if possible I prefer to preserve the ossicles and do the so-called Heath's operation and thus preserve as much of the hearing power as possible. Of course where cholesteatoma is present, the radical operation is

often indicated, but even then one cannot lay down any definite rule. In such cases one must be guided by general surgical principles.

H. S. Birkett, M.D. I wish to express my appreciation of the work which my colleagues have presented to us this evening, and to congratulate them on the results obtained. These patients represent a group of cases which has been until the past decade rather a source of worry to the otologist on account of the rather alarming symptoms which this condition is apt to give rise to. Owing to the work of many otologists on the Continent the operation, which has been introduced by them, has been so perfected that the dangers associated with such conditions as these under consideration to-night have been practically eliminated. Otologists, however, are practically unanimous that the radical operation is the proper measure in dealing with this class of case, but the one point in question is that of the dealing with the matrix. On the Continent we find the camps divided into two classes,—those which are strongly in favour of the removal of the matrix and those strongly in favour of its being left. Amongst those who are opposed to leaving the matrix are:—Politzer, Heine, Kirchener and Ostmann; these are representative men in otology and they express doubt as to the advisability of leaving the matrix. On the other hand, we find the opposite side ably represented by Siebenmann, Habermann and Hartmann. These men we find are very strongly in favour of leaving the matrix as a preliminary to the epidermization which takes place, and which is so well evidenced in these two cases here on exhibition. However, there is one person, Koerner, who does not express himself quite so emphatically. He takes the stand that when the choleostoma is rather sodden and the underlying bone diseased, it should be removed, but should the matrix be found lying upon dry healthy bone, he is in favour of its being left; and it seems to me that this is the broader view to follow. The above-mentioned author, from his pathological investigations, has found that this choleostomatous mass dips in the Haversian canals, and if left would necessarily endanger the life of the underlying bone. But the fact that it might be left and we may get excellent results, is seen in the two cases exhibited here to-night. There is one question which I would like to ask Dr. Mathewson. If I remember rightly he exhibited a case some two years ago before this Society in which I think he removed the matrix. I would like to know what the ultimate issue of that case has been, as it is rather in contrast to the cases exhibited to-night.

H. S. Muckleston, M.D. Something in Dr. Birkett's remarks reminded me of a conversation I had with Siebenmann's assistant, Dr. Nager. On an examination of sections of the ear showing this

condition, I remember drawing his attention to certain cystic spots not actually within but above the matrix and lower than the actual cholesteatoma itself. The spaces were filled with epidermal debris and pus. To my question, "won't you have trouble later on with these?" his reply was that he did not interfere with these masses but preferred to leave them, and the results were uniformly satisfactory. The inmost recesses of the tympanum, e.g. the lower part and the posterior wall, cannot be reached with any degree of efficiency, and he left this untouched. I think the practice of the moderate operation, the so-called Heath operation, originated with the Bezold school of Munich, of which Siebenmann is one of the most prominent disciples: local jealousies between the different schools would account in part for the tardy acceptance of the method by men elsewhere.

G. H. Mathewson, M.D. Two points are of interest in connection with these cases. First of all this operation will not cure every case; there are a certain number of cases that do not remain dry after such an operation; and secondly, that the operation is not perfectly safe as I think Dr. Birkett has remarked. In the Manhattan Eye and Ear Hospital of New York, there have been quite a number of deaths from the radical operation in patients who were operated on solely because their ears had been running for such and such a number of years, such patients dying of intracranial complications.

E. Hamilton White, M.D. In bringing forward this modification of the radical mastoid operation I had no wish to create the impression that it was of universal application. It is a special method to be used in a special class of cases, namely, those complicated by the development of cholesteatoma. In my opinion this is the most important type of chronic middle ear suppuration, giving the greatest danger of intracranial involvement. As regards what has been said of the dangers and unsatisfactory results which may follow a radical mastoid operation, I think these are quite as uncommon as after any other major operation if done by a properly qualified surgeon. The operation certainly requires special training and some operative experience to get the best results. I think some of the disappointments result from operation upon cases whose chronicity is due to the condition of the Eustachian tube, which cannot be dealt with radically with any assurance of success. As "Heath's operation" has been mentioned, I may say that in the opinion of his colleagues in London it is not even a new method. As I understand it he opens the antrum by removal of the posterior upper wall of the meatus. I can see no indication for or advantage in such an operation. If the antrum is to be drained it can be opened much

more easily and safely by the ordinary route. His conservatism is reserved for the outer table of the mastoid which may be removed with impunity, whereas he operates in the region of the deeper and more vital structures without the advantages of a free exposure.

PATHOLOGICAL SPECIMEN: MICROPHTHALMUS AND CONGENITAL CYST.

J. W. Stirling, M.D. I mentioned at our last meeting, in connexion with Dr. Byers' case of Microphthalmus, that I had a case of congenital cyst associated with microphthalmus and I have the specimen with me to-night. The patient was a child about three months old when brought to me; the eye affected was the right eye. There was a large swelling about one half inch in diameter behind the lower lid; it was bluish in colour and on palpation there was fluctuation. The upper lid was markedly retracted and as far as I could see there was no sign of any eyeball, but on deep palpation a small rounded body about the size of a very small marble could be felt far up and back. After keeping the case under observation for a short time I arrived at the conclusion that it was one of these rare cases of congenital cyst associated with microphthalmus. I enucleated this minute eye and the cyst. As you likely all know, in the lower inferior quadrant of our eyes there is congenitally a cleft in the secondary ocular vesicle and through this the mesoblast projects into the anterior of the globe. This as a rule in the 6th week of life of the fœtus closes up. But sometimes, from one reason or another—possibly thickening of the mesoblastic tissue—the healing is incomplete. If it be incomplete at the anterior end you may get what is commonly known as coloboma of the iris, or it may be of the ciliary body or only of the choroid; or if the cleft extends back into the optic nerve, of the nerve itself. In this case there had developed a cyst in this imperfectly closed cleft and it has enlarged so that the dilatation has developed into the form of this cyst which is projected forwards behind the lower lid. As a rule it is found to be lined by a more or less developed retina and sometimes choroidal tissue. During the enucleation of this growth and eye I accidentally punctured the cyst and there was an escape of a straw-coloured alkaline fluid. The eye itself is very small; the cornea although small is transparent; there is an anterior chamber and I presume also a lens. These are the main points in connexion with the case and when sections are made of the specimen further details will be forthcoming. These cases are quite rare and interesting. I will pass around photographs of the child and also a drawing which will help to illustrate the case and for which I am indebted to Dr. Tooke.

TWO CASES OF SO-CALLED DOUBLING OF THE PUNCTA LACRIMALIA.

FRED. T. TOOKE, M.D.

G. H. MATHEWSON, M.D. These cases are very interesting. I have seen quite a number of these so-called double puncta. All that I have seen have been in the lower lid, and the second punctum, the inner one, has been flat and nearly the same size as the other but perhaps a little bit longer. It had not struck me that it was flat until my attention was drawn to this fact by Dr. Tooke. Those that I saw had no effect on the patient, the tears went down the canal just as well as in normal cases.

AMBLYOPIA EX ANOPSIA WITH ACQUISITION OF GOOD VISION AFTER LOSS OF THE SEEING EYE.

G. H. MATHEWSON, M.D.

There has been much controversy as to whether such a condition as amblyopia ex anopsia, i.e. blindness or very poor vision from non-use of the eye, really does occur. The following case, which is unique in my experience, though a few similar cases have been reported by others, gives conclusive proof that there are eyes which do not see simply because they have not been trained to do so. On May 27, 1908, W. G., a boy of thirteen years of age, was brought to me with a badly damaged eye. The history given by the boy's mother was that while playing with some companions on the previous day he had been struck a violent blow on the left eye by a large stone thrown by one of the other boys. Both the boy and his mother stated also that he had never had good sight in the right eye. On examination I found that the left eyeball was ruptured and disorganised. On June 2nd I enucleated the left eye and after an uneventful convalescence the boy left the hospital a week later. At this time the vision of the right eye was found to be no more than ability to count fingers at 12 feet, but with the addition of a plus 4.00 D. spherical glass it was improved to 6-36. He was unable to read even coarse print with the glass. After a second examination under homatropin, which showed about the same degree of refractive error, I gave him the plus 4.00 D. spherical, telling his mother that there was some hope that his vision would improve. Five weeks later she brought him back and I was both surprised and delighted to find that without any glass he could see 6-12, while with the glass he could see 6-9 and read the finest print with ease.

THROMBOSIS OF THE CENTRAL VEIN OF THE RETINA WITH RECOVERY OF NORMAL VISION.

These cases of thrombosis of the retinal vein are not common and

usually occur in people between 60 and 70 years of age. The prospects for recovery of normal vision are bad. Schöbl says vision may be partly restored, while Ball says that complete restoration of vision is hardly to be expected. I have seen two cases, in the first of which vision was entirely lost, while the second I shall now briefly narrate. On March 16, 1908, I was asked to see H. C. P., a man of 38 years of age, who complained of sudden loss of sight in the right eye. The history he gave of the trouble was as follows:—On February 20th, while looking out of the window he suddenly became blind in the right eye. He had never had anything wrong with either eye before. He had no pain in the eye nor has he any now, nor any other symptoms beyond the blindness. Previous history: Right leg amputated at the junction of the upper with the middle third of the thigh at the age of eight, on account of what was probably an osteomyelitis. The stump is healthy. Present condition: Circulatory system normal except that the radial artery is somewhat thickened. Temporal arteries are normal. Urine normal. Blood normal. Ophthalmoscopic examination showed great swelling of the optic disc and retina, extreme congestion and tortuosity of the retinal veins. Where the arteries can be seen they are narrowed. The swelling of the disc reaches a height of 5 dioptres. There are a great number of hæmorrhages, nearly all flame-shaped, arranged in a stellate manner about the optic disc, while many other hæmorrhages are scattered irregularly in other parts of the retina. Two white patches of exudate were to be seen in the neighbourhood of the disc. There was no red spot in the macular region. R.V.—Fingers at 12 feet. L.V.—6-16. The Calmette Tuberculin test gave negative result. He was given inunctions of mercury, also potassium iodide, and pilocarpin sweats with little effect. On April 5th there were many less hæmorrhages, perhaps only 1-10 the number seen a month previously. There was still great swelling of disc and retina. On Feb. 19, 1909, he returned stating that he could see with the right eye, and I found the R.V.—6-6. L.V.—6-6. The right fundus showed absolutely no abnormality beyond one or two slate-coloured spots, probably on site of former hæmorrhages. I wish to express my thanks to Dr. Finley for permitting me to publish the report of the physical examination, etc., of the case which is taken from his records.

R. A. Kerry, M.D. Dr. Mathewson's first case is very interesting, Recovery of sight after a venous thrombus, though infrequent, is not so rare, as in the case of embolism of the artery. Recently a patient came to me with complaint of sudden blindness coming on eight days previously. The fundus showed a typical picture of

embolism of the central artery, although the blocking of the vessel was probably not quite complete. There were numerous venous hæmorrhages about the disc, the macula was bright red, the fundus about it yellowish-red, instead of dead white as is often the case. The veins were somewhat congested, the arteries of moderate size and showing broken blood-columns, no reversed pulsation was observed. There was a trace of albumen in the urine, and Dr. Robins, who kindly took the blood pressures, reported it very high, a little over two hundred. She was given treatment to reduce the high pressures and in a few days reported the sight as improved. At this time the arteries contained continuous instead of broken columns of blood and the fundus appeared to be clearing. If the opportunity should occur I will report further progress of this case.

Regarding Amblyopia ex Anopsia I have made a practice of correcting these cases for a number of years, usually with good result. The time required to develop sight varies a good deal. I have seen an eye with less than 6-60 vision come to normal in a little over a month. At the other end of the scale, I may instance a case with rather high myopic astigmatism in which corrections produced but little improvement. After a year the left eye had developed to nearly normal, while the vision of the right eye showed but little gain. Yesterday I operated for divergent strabismus upon an eye, which, excepting for the divergence, was practically normal and in which the sense of form was quite undeveloped. There is in many cases some other factor besides non-uses of the eye, a want of capacity for function in the nerve tissue or sometimes a cerebral condition which interferes with the proper perception of impressions made upon the retina. A few years ago correction was not given for these eyes. I now always prescribe a glass, excepting in cases in which the amblyopic eye requires a very strong lens and the fellow eye none.

G. H. Mathewson, M.D. In reply to Dr. Martin I would say that recovery of normal vision in cases where retinal hæmorrhage has occurred is quite common. The prognosis for the recovery of vision depends on the number and size of the hæmorrhages, their depth in the retinal tissue, their nearness to the macula lutea, and finally whether the blood leaks through into the vitreous body. Very often the hæmorrhage is not the main factor in causing loss of vision, it being only an accompaniment of other lesions. In the case which I have just described the chief cause of the loss of vision was the great œdema of the retina which caused pressure on the nervous elements. I was asked to see a case in Dr. Finley's wards about two years ago, a man with very severe anæmia, secondary

to malaria, whose retina showed a great number of hæmorrhages, some very large and some situated in the macular region, with great loss of vision and yet he recovered normal sight. With regard to the other case, this boy had simply enough sight to move about, and yet with proper glasses and the strong impulse to use the eye from having lost the other, he had almost normal vision within five weeks. I believe that formerly he had mentally suppressed the images or sensations derived from the poor eye.

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SPINAL ANÆSTHESIA.

A REPORT OF THE DEMONSTRATION GIVEN BY PROFESSOR THOMAS JONNESCO OF BUCHAREST AT THE MOUNT SINAI HOSPITAL, NEW YORK.

BY

W. W. CHIPMAN, M.D.

Since the Congress of the International Society of Surgery, held in Brussels, in September, 1908, the medical world has become more or less familiar with the name of Professor Thomas Jonnesco of Bucharest—with his name and with his work on spinal anæsthesia. For it was at this Congress that Jonnesco first submitted, in extenso, his report of 617 cases of spinal anæsthesia and at the same time instituted a claim to pioneer achievement both in the method of his procedure and in the choice and combination of his drugs. During this past intervening year Jonnesco has been certainly industrious: the 617 operative cases have now risen to 1015, his speech has been frequent and free, and he has travelled far. With Bier of Berlin he is now joined in controversial issue, while Vienna, Berlin, Paris, and London have all submitted to a demonstration of his method. Last week he was in New York, and the story of his spinal anæsthesia in his own words reads as follows:—

> "1015 adminstrations, including operations upon all parts of the body, without a death or even serious misadventure. Among these are 14 on the skull and 68 on the neck and face. General spinal anæsthesia is absolutely safe: the fear of pricking the cord is unfounded; even if this happens it is not harmful, and I am firmly convinced that, being infinitely superior to inhalation anæsthesia, it will shortly become the universal practice."

With the reading of such a text can we wonder that William Mayo journeyed down from Rochester to New York, or marvel that there rises for the medical profession the question of a new star risen again in the East?

I was fortunate enough to be present at a demonstration given by Jonnesco at the Mount Sinai Hospital, New York, on Thursday,

a week ago, and I have thought that an eye-witness account of the proceedings of that afternoon might prove of interest to this society. Accordingly I have thought it best simply to describe the proceedings of this demonstration exactly as they occurred, in the hope that there may be reproduced for each one of you a picture both definite and impartial, from which your own individual inferences may be drawn. Afterward I shall deal very shortly with several impressions and give a few general conclusions.

The large operating theatre at the Mount Sinai was crowded by the New York profession to an ideal degree of suffocation: the seating capacity is small, for it is not a teaching Hospital. Gerster, the senior surgeon of the first service, was in charge, flanked by a large array in white duck, his assistants and the house-staff. Professor Jonnesco, accompanied by his own special assistant, was introduced, the language spoken being French. This assistant carried the armamentarium—an ordinary Pravaz exploring syringe, the needle of medium calibre, about 4 inches long and with a short, widely- bevelled point; two bottles, carefully sealed, of strychnine solution of different strengths, a tube of stovaine crystals, and a small glass mixing tube. And first this small paraphernalia was carefully sterilized, save the drugs, which are themselves sufficiently antiseptic.

Case I. A young man of 25 years, well-developed, a basket-ball player, with a chronic mastitis of the right breast; and this breast was to be removed. Accordingly this was a case for Jonnesco's "Upper Dorsal Puncture." While the skin of this upper dorsal region was being sterilised, Jonnesco and his assistant mixed the injection fluid. One c. cm. of the weaker strychnine solution was drawn into the barrel of the syringe. This contains ½ mg. of strychnine sulphate, the smaller dosage always employed at the higher level. Three cg. of stovaine were placed in the glass mixing tube and the 1 c. cm. of the strychine solution discharged from the syringe upon the crystals. This tube was now corked and shaken vigorously until the stovaine crystals were completely dissolved, when the solution was carefully withdrawn again into the same syringe. The injection was now ready and its fluid bulk was 1 c. cm. The needle was now detached from the syringe and with no trocar or stillette was grasped with the fingers exactly as a pipette is grasped, the fore-finger being placed over the proximal aperture. The patient was in the sitting posture, with neck acutely flexed, chin down on sternum, and the trunk arched strongly forward. Jonnesco with the left index finger identified the vertebra prominens and thence the interval between the 1st and 2nd dorsal vertebræ, the site of the puncture. The needle was plunged through the

skin directly in the middle line and passed down to the ligaments in a plane perpendicular to the surface. Then the proximal end of the needle was depressed to allow for the "shingling" of the vertebral laminae and the needle pushed slowly inward and upward to the depth of three inches from the surface. No cerebro-spinal fluid appeared. An aspiration syringe gave no result save a drop or two of blood. The needle was then forced in more deeply still, and a free hæmorrhage through it at once became manifest. Repeated aspiration simply filled and refilled the syringe with pure blood. The needle was slightly withdrawn and its point directed from side to side, and still a negative result. Finally the needle was altogether removed. A second time the spinal landmarks were verified and the needle plunged in and more deeply than before. Aspiration here gave no result. The needle being a short distance withdrawn, free bleeding again occurred. Aspiration showed at first pure blood but afterward a few drops of clear fluid showed in the barrel of the syringe. Jonnesco was satisfied with this, and the cubic centimetre of the drugs was slowly injected. A gauze pad was placed over the punctures and held in position by simple strapping. The patient sat upright for one minute and then was placed in a semi-recumbent position, the head and shoulders being slightly elevated. The field of operation was sterilised, and ten minutes from the time of the injection, the patient was blindfolded, an assistant designated to watch respiration and pulse, and the operation began. Gerster operated. A racquet-shaped incision through the skin with extirpation of the whole gland and accidental button-holing of the external flap developed in rapid succession. The man struggled and complained bitterly from the first—kept iterating "I can't stand it, Doctor, I can't stand it. Give me ether; for God's sake, give me ether." Encouraged by the surgeon to bear it and be a good boy, the ejaculations were suppressed only to break forth anew as the sutures were being passed, and so the operation concluded. The patient was at once propped up in a semi-erect position his pulse and respiration were pronounced unaltered, but the face bore all the evidence of suffering and shock. Jonnesco, when asked pronounced the case a fair success, to which remark from an upper seat came the sharp rejoinder: "Well, I don't," and pointing to the patient, "Ask him." Gerster asked and got as answer, "I felt every cut you made, Doctor, but one," and a second onlooker observed, "I wonder which one."

Case II. A youth of 18, less robust and of a more nervous type than Case 1. Right inguinal hernia. This was a case for the lower dorso-lumbar puncture. The injection fluid was made as before,

only a larger dose was given. One c. cm. of the stronger strychnine solution which contains 1 mg. of strychnine sulphate was used to dissolve 10 cg. of stovaine, but the fluid bulk of the injection was, as before, 1 c. cm. The patient sat upright with his body strongly arched forward, and the needle was plunged straight inward between the spine of the last dorsal and first lumber vertebræ. The needle hesitated at the ligaments but passed at once into the subarachnoid space. Cerebro-spinal fluid promptly appeared and was checked, and the injection was immediately administered. The patient was placed in a semi-recumbent position, the operation-field sterilised, and in ten minutes he was blindfolded and the operation begun. He complained scarcely at all. A retractor in the upper angle of the incision caused discomfort, and when the peritoneal sac was pulled down he spoke of epigastric pain. Forcible traction on the spermatic cord occasioned no suffering whatever. At the conclusion of the operation, however, the face was pale and there was some sweating.

Case III. A girl of 23. Tuberculous glands in the neck. A case this for the upper dorsal puncture and the smaller dosage, as in Case I.

The needle was introduced as before to the depth of three inches, aspirated frequently, moved inward and outward and from side to side, all with negative result. Presently the needle was completely withdrawn and re-inserted. Free hæmorrhage now occurred and repeated aspiration yielded only one syringeful of blood after another. Again the needle was withdrawn and a third time inserted —this time almost up to the very hilt. Bleeding again was troublesome and repeated aspiration only aggravated this. Inward and outward the needle moved in its search. The excursion of the movement within the spinal canal appeared to be at least an inch. Finally the needle was altogether withdrawn and the attempt at spinal anæsthesia abandoned.

Case IV. A man of 40. Interval appendix. Here the dorso-lumbar puncture was made and the larger dose given as in Case II. This time the desired space was reached at the first attempt and the resulting anæsthesia was quite satisfactory, though the patient began almost at once to complain of slight headache.

These four cases concluded the demonstration. I leave it to each one of you to draw his own conclusions. In my opinion the two cases of low puncture were sufficiently successful, while the two cases of upper dorsal puncture were distinctly painful failures. The cases were of course too few to warrant any generalisation, and yet they seemed to me to stand for an ordinary day's work, for even though in

one case there was absolute failure to identify the subarachnoid space, and in another there was produced no apparent analgesia whatever, there certainly was no paralysis; to Jonnesco nothing unusual seemed to have occurred, and no apology or even explanation was vouchsafed. Moreover even as regards the successful cases we all have seen equally satisfactory results achieved by means of local, stage, anæsthesia, and this without the pain and difficulty of administration and without the subsequent paralysis and shock.

My own impression of the method was accordingly unfavourable, and a visit to the three patients in the ward an hour later served but to accentuate this hostile impression. Case I, the young man from whom the breast had been removed, showed no general anæsthesia and no paralysis whatever. His house-surgeon maintained, and I think rightly, that he had never showed any, even during the operation, save a small area of persisting anæsthesia over the left scapula. The inference was warranted and plain that in this case the subarachnoid space had not received the injection but that it had been made somewhere alongside this and had possibly involved one of the left-sided nerve roots. This case illustrates forcibly the difficulty of entering the subarachnoid space at a high level, for the execution of this measure was for the time in the hands of a recognised expert. I think I may safely state that in neither of the two candidates for the upper dorsal puncture was the subarachnoid space definitely reached. In Case III, the girl with the tuberculous cervical glands, the operator himself frankly admitted failure, and Case I, with which he had pronounced himself satisfied, showed no evidence whatever of subarachnoid medication. Cases II and IV of the low dorso-lumbar puncture lay semi-upright in bed and seemed fairly comfortable: this maintenance of the semi-upright position is advocated by Jonnesco for from three to six hours in all post-operative cases. In both patients the paraplegia was complete and to both this was a matter of considerable concern. There was no control of either bowel or bladder, and in Case IV, the man of 40, there was marked hyperæmia of the soles of both feet. This motor paralysis, it is stated, passes off in from 12 to 24 hours. In both these patients it did so. But for me, I confess this picture of absolute paraplegia was, to say the least, disconcerting and by no means devoid of apprehension. Moreover the level of the puncture made directly upon the lumbar enlargement bulked largely in the conception, and this sinister impression was further accentuated by K—— of New York, who volunteered the recital of an experience in his own practice where some six months ago stovaine was injected altogether below the

level of the cord itself, between the 2nd and 3rd lumbar vertebræ, to enable him to perform a simple perinæorrhaphy upon a stout female. Persistent incontinence of both urine and fæces had been the outstanding result, and the surgeon, in his own words, had on various occasions carefully dodged the irate husband at the street corner. "And you needn't tell me that the addition of one mg. of strychnine would have made any difference", concluded the dismal recital.

So from the demonstration as a whole the general impression was distinctly unfavourable. As a whole it illustrated again the great difference that obtains in different points of view. On the one hand Jonnesco pronounced himself as fairly well satisfied with the results, while from our own point of view, in the four selected cases, nothing whatever transpired to recommend the procedure. And moreover such a demonstration provides a trustworthy light in which to read the enthusiastic conclusions derived from the 1015 cases. Jonnesco himself must consider his method successful, else he would not hazard the actual ordeal. We must conclude that with possibly a more Spartan *materiel* a different point of view prevails in Bucharest.

Spinal anæsthesia is twenty-five years old, for it was in 1885 that Corning of New York made the first injection. Though it has gradually come to be somewhat extensively employed by different observers, it has never won anything like a general recognition from the profession. Its history has been one rather of many vicissitudes, and even the advantages claimed for it have in the experience of many been extremely dubious or problematical. Hitherto it has found small favour in America. In Europe, where it has been much more largely used, it has undergone many modifications in the matter of details of technique and drugs exhibited, and chiefly from the hands of Bier, Donitz, and Tuffier. Jonnesco is at present its most enthusiastic advocate. His claim to originality lies in two things—the general use of the high-dorsal puncture and the addition of strychnine to the analgesic. He is, I believe, the first to advocate the universal employment of spinal anæsthesia and to proclaim that thereby the days of inhalation anæsthesia are numbered. To most observers this proclamation will appear unwarranted and premature. Our present-day knowledge of spinal anæsthesia justifies, I think, the following conclusions:—

Subarachnoid injection in any region higher than the lumbar is difficult to perform and ought never to be performed, for when employed at this higher level it is uncertain in its action, difficult to control, and sometimes dangerous. It is seldom, if ever, satis-

factory for any operative work above the waist-line, even in the hands of the most accomplished expert.

The safest and most reliable drugs are two—stovaine and tropococaine. To these strychnine or adrenalin may be added. It must, however, never be forgotten that these drugs are protoplasmic poisons and that they have a marked affinity for the tissue of the central nervous system, rapidly forming with their tissue-protoplasm, compounds more or less stable. The contention is that within the subarachnoid space the drugs act directly upon the naked nerve roots and not upon the conduction tracts of the cord itself, so that a simple nerve-block is all that is produced. But unfortunately there is no guarantee of this, and even the optimism of Jonnesco admits a certain proportion of untoward after-effects—of headache in 6.25 per cent., retention of urine (described as transitory) in 4.5 per cent., fæcal incontinence in some cachectic feeble individuals 4 per cent., and a slight rise of temperature in 50 per cent. Be it remembered moreover that even a transitory headache means a rise in intracranial pressure, due to an increase in the cerebro-spinal fluid and accompanied by all the phenomena of a reactive inflammation. In a word a headache is an early meningitis. And the roof of the fourth ventricle is only pia mater, and fenestrated at that, and within is the Holy of Holies. Cocaine in the subarachnoid space is a deadly drug. With the use of stovaine and tropococaine there have been few recorded deaths—some 4 in 5000 cases, though Professor Rehn of Frankfort has shown that in animals the high injection even of these drugs is acccompanied by considerable danger.

The prudent and only justifiable method of inducing spinal anæsthesia at the present day seems to be this: Use only stovaine or tropococaine, alone or combined with strychnine or adrenalin. Make the solution small in bulk, 1 c.cm., and nearly isotonic with the cerebro-spinal fluid; warm it to the body temperature, and inject it slowly and always at the seat of election, namely, between the 3rd and 4th lumbar vertebræ. So administered it is safe, and there is a definite though limited field for its employment. It is sufficiently satisfactory only for operative work below the waist-line and is specially adapted for cases where an inhalation anæsthesia is contra-indicated, and other local anæsthesia is difficult or impossible. Such cases are prostatectomies, operations upon the rectum, anus or perinæum, and all radical work upon the lower extremities. It is claimed for it that it will prove a useful adjunct in military surgery, and though *a priori* it promises well in difficult parturition, its employment in such conditions has been hitherto extremely limited.

Such then is, I think, the sound position in regard to spinal anæsthesia, far as this position is from that of Professor Jonnesco. It is idle to prophesy of the future, but for us of to-day in the matter of general anæsthesia there is as yet no new star risen.

AN APPARATUS FOR RECTAL ANÆSTHESIA.

BY

E. M. VON EBERTS, M.D.,

Outdoor Surgeon, Montreal General Hospital, Montreal.

I have assembled for your inspection an apparatus for the administration of ether per rectum which in its simplicity and general construction follows closely that devised by Cunningham of Boston.

Chiefly through the investigations of Cunningham, Leggett and Dumont, the administration of a general anæsthetic per rectum has reached a degree of safety which compares favourably with the inhalation method. With improvement in apparatus and technique the unsatisfactory results and occasional fatalities encountered by earlier investigators have been largely eliminated. These favourable results depend mainly upon two factors: first, the relief of ileocæcal spasm through the induction of primary anæsthesia by inhalation, and secondly, the regulation of the temperature of the ether vapour so that condensation does not occur within the bowel.

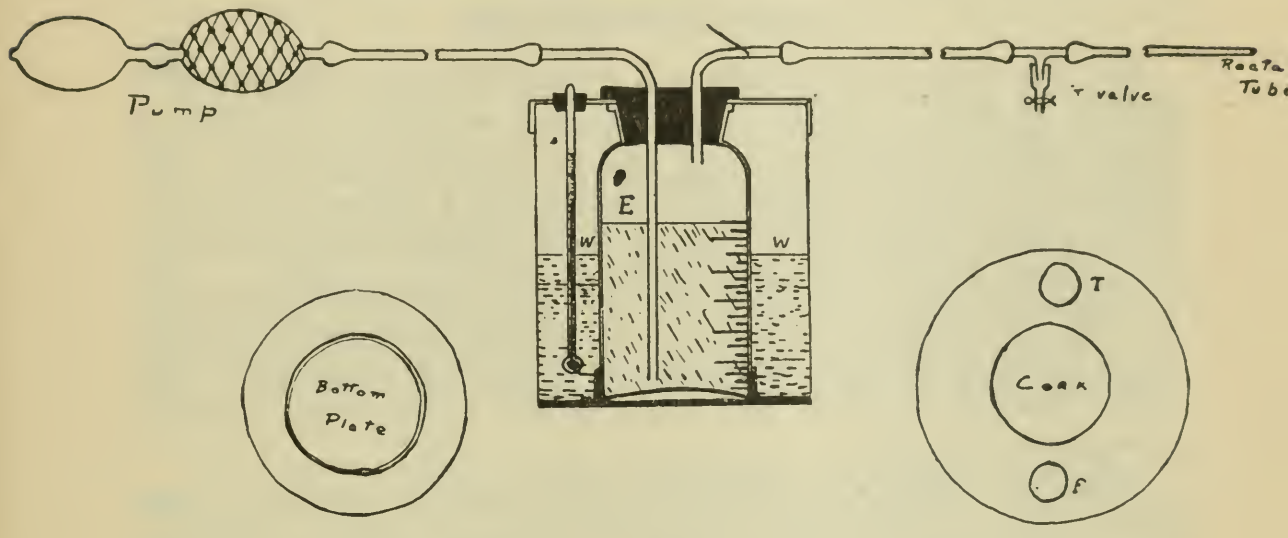
Primary anæsthesia may be induced by the administration of ether, chloroform, or ethyl chloride. A further important factor is the preparation of the patient. A purgative should be given twenty-four hours before operation, and shortly before anæsthesia the large bowel thoroughly emptied by soap enemata. The rectal tube should be introduced as far as possible and a gloved finger retained within the rectum. As a preliminary, in order to get rid of other gases in the bowel, the colon should be several times inflated and emptied, the expulsion of the gas being aided either by manipulation of the finger beside the tube or the release of the lateral valve. Kneading of the descending colon and sigmoid is a further aid.

Cunningham has not found the administration of oxygen generally necessary, although the lateral valve provides for the attachment of an oxygen supply. Dumont has recently employed a glass bulb interposed between the ether jar and the rectal tube. The ether is conveyed into the bulb through a smaller tube which curves downward, facilitating the collection in the bottom of the bulb of any droplets of condensation.

Demonstrated at the Montreal Medico-Chirurgical Society, January [illegible] 1910.

The value of rectal anæsthesia in selected cases is now, I think, generally accepted. It is especially suitable in operations upon the mouth, neck and thorax. Even in thoracotomies for the relief of empyema prolonged narcosis by inhalation is always strongly contra-indicated.

It is with the view of employing rectal anæsthesia in conjunction with positive pressure in intrathoracic manipulations that I have assembled the apparatus exhibited. If primary anæsthesia can be induced with ethyl chloride and narcosis maintained by the rectal method of administration, the danger of vomiting during the application of a positive pressure mask will be largely eliminated, and the form of apparatus suitable for intrathoracic work reduced to a degree



Sketch of Apparatus
(after Cunningham)

of simplicity, cheapness and portability hitherto unthought of in pressure difference equipments. I hope to have an opportunity of reporting later upon the results obtained in the use of rectal anæsthesia in experimental intrathoracic surgery.

As you will see, the apparatus consists of an outer jar (in this case a galvanic cell) containing an ether bottle, the space between the cell and the bottle being filled with water at a temperature of 90 degrees. Through the rubber cork in the bottle is passed a long glass tube connecting with an ordinary cautery bulb, while the second perforation in the cork is occupied by a short tube which provides for the exit of ether vapour. Between the bottle and the rectal tube is introduced a T-tube for the rapid relief of tension within the bowel or the attachment of an oxygen supply. Should the ether tend to rise in the bulb tube through back pressure, a pair of hemo-

static forceps should be applied between the bulb and the bottle. The metal ring placed in the bottom of the jar I have devised not only to hold the ether bottle in position but to diminish the chances of breakage when hot water is poured into the jacket. The metal cap provides passage on one side for the thermometer and on the other for a funnel when the addition of hot water is found necessary. I have no doubt that many minor improvements in the apparatus will suggest themselves with experience in its use.

THE TUBERCULOSIS DISPENSARY AS AN ECONOMIC FACTOR.

BY

JEFFREY H. BURLAND, B.Sc.

The zeal with which science and philanthropy are attacking this, perhaps greatest, problem of our age—the cure and prevention of tuberculosis—is throwing a strong light on a great many aspects of the situation of hitherto unsuspected importance and danger to other interests than the public health. Among these, the yearly losses in revenue to insurance from the excessive mortality due to consumption, as well as from the increasing incidence of the disease, stand out prominently as an arresting factor in the normal development of a business which would otherwise naturally grow, in a certain positive ratio, with the increase of population.

From the calculations, observations, and statistics compiled by experts in this comparatively new field of research, there is startling, though incomplete, evidence at hand of a heavy drain on insurance profits, and a vast amount of business lost, through the prevalence of tuberculosis. The value of these discoveries can hardly fail to be appreciated at a first glance. The necessity for taking immediate action in the shape of prudential and preventive measures, by co-operation with the existing remedial agencies, is also apparent. I hope to show conclusively that the insurance companies will be among the first to feel the benefits of such co-operation, and that the resulting improvement will be both permanent and progressive. The truth of Emerson's axiom that "the first wealth is health" will, I trust, be abundantly demonstrated in the course of my remarks.

The first and most important fact to be realised in this connection is the high and uniform rate of mortality from tubercular diseases recorded in every country in the world. According to the mortality statistics of the Mutual Life Insurance Company of New York, Canada gives the

An address read before the Insurance Institute, Montreal, January 10th, 1910.

highest rate in America and Europe, the lowest being in Mexico. These mortality statistics of the Mutual Life, covering a period of fifty-five years, namely from 1843 to 1898, show that consumption heads the list of the causes of death, and shows larger numbers than any other single disease. The total number of deaths from consumption during this period was 5,585. In the words of the above-mentioned report, "the disease is of supreme importance to life insurance companies on account of the exceedingly great number of its victims at all ages, and especially among those below middle life. In the age period under fifty-five years, it has been the cause of nearly one-quarter, and in the period—forty-five to sixty years—of more than one-tenth of the deaths from all causes combined. Its influence seems to persist even to extreme old age, for eleven deaths from consumption have been reported in persons over eighty years."

The report continues: "Though consumption is one of the diseases which we might expect to see eliminated from the statistics of insurance by the influence of medical selection—because the suspected organs are susceptible of examination, also because the approach of the disease is so frequently indicated by the general physical appearance,—yet experience proves that though the rate of mortality from tuberculosis is diminished during the first year after insurance by medical selection, the rate in the second year is more than doubled, and it increases still more in the succeeding years.

"The largest number of deaths is found in the period of thirty-five to forty years of age, and the highest rate is between twenty-five and thirty years. The apparent exception in the first or youngest period is explained by the fact that this must represent a larger proportion of newly-selected, healthy lives in whom there has been a shorter opportunity for the development of the disease, subsequent to the entrance examination."

It would seem, however, that the influence exerted by medical examination is exhausted by the elimination of those already afflicted with the disease; after insurance, the disease is as likely to begin immediately as at any subsequent period. The highly infective character of consumption and the universal exposure to infection of all classes of society are, therefore, a constant menace to the safety of even the most assured risks.

On the basis of 150,000 deaths yearly from tuberculosis in the United States, the National Association for the Study and Prevention of Tuberculosis computes that there are 684,934 persons constantly ill with the disease. Of these, about one-third are assumed to be wage-earners. Allowing only $500 as the average earnings of the workingman who

dies, the annual loss to the country from the ranks of labour alone is thus over $114,000,000 each year.

I am informed by a well-known actuary, that a community pays, in life insurance premiums, a sum equivalent to 5 per cent of its wage-earning capacity; accepting this as a basis, and applying it to the above figures, we find that the annual loss of insurance premiums in the United States amounts to $5,700,000.

Since the census of 1901, we have no vital statistics for the whole Dominion from which to compute the present rate of mortality in Canada from tuberculosis. Taking the provinces of Quebec and Ontario separately, however; we find that in Quebec, with a population of 1,648,998, and a mortality of 30,000 for the year ending July 1906, the number of deaths due to tuberculosis was 2,935, or over 9 per cent of the total mortality.

In Ontario, during the same year, in a total population of 2,182,947, the total mortality was 26,414, and the number of deaths from consumption was 1,996, or nearly 7½ per cent of the total mortality. For the two provinces, the total mortality was 56,414; the total of deaths from consumption was 4,931 or over 8½ per cent. If we take the percentage of mortality as above shown, and apply it to our present population—7,350,000—as given by the census of last March, we find that the total number of deaths for the year 1909 will be, approximately, 125,000. The percentage of deaths herein included caused by tuberculosis would, as above found, give a mortality of 10,625.

According to Dr. R. W. Philip, of Edinburgh, we may safely multiply the number of deaths from the disease by 10 in order to obtain the number of persons actually suffering from it. If we apply this rule, we find no less than 106,250 persons in Canada who, on account of some tuberculous affection, are ineligible for acceptance by the Insurance companies. If we now apply the rule of the American National Association for the Prevention of Tuberculosis, we find that the cash loss in insurance premiums amounts to no less a sum than $885,500 per annum. This loss is altogether apart from the losses suffered by companies owing to the mortality amongst accepted risks, from tuberculosis.

The insurance companies in Canada have not thus far tabulated all the figures which would be necessary to give an accurate idea of the situation as it affects their interests, so I can but roughly estimate their losses from the statistics at hand. From one well-known Canadian Company, I have received the following general statement: The total deaths in Canada of those insured in the Company for 10 years ending 1907, numbered 1,859. Of this number, 287 died of consumption, and 161 from lung disease not specified as tubercular, though probably of

that nature. The average policy being estimated at $1,500, this Company, it is roughly calculated, has paid out $430,000 in claims through consumption, and $240,000 in claims from lung disease, that is $670,000 or nearly one-quarter of $2,800,000, the total amount paid for all claims in the same period.

Another Canadian Company gives me the following figures: The number of applications declined on account of history of tuberculosis within the last four years was 151. Of policies issued by the Company since November 1st, 1905, seventeen, for $24,500, have become claims by death from this cause, and during the same period, the total number of deaths amounted to 120, for an aggregate insurance of $192,342. Thus nearly one-eighth of the whole amount was paid in claims through tuberculosis.

According to Dr. Philip, "the usually accepted statement that from one-seventh to one-tenth of the race die from tuberculosis—grave as it is—does not exhaust the truth. The records of post-mortem examinations show that at least one-third, and probably one-half, of all persons dying bear traces of tuberculosis in one shape or another. The experience of our hospitals and dispensaries emphasises the view that the statistics of mortality from tuberculosis insufficiently suggest the great frequency of its incidence." Dr. Philip further remarks that he has had occasion, through the system of domiciliary visitation instituted by him in connexion with the Royal Victoria Dispensary, Edinburgh, to realise the appalling frequency with which several members of the same household in the contracted dwellings of the poor are simultaneously affected by tuberculosis. He finds abundant reason for the statement that there are, in every great centre, crowds of infected dwellings, veritable nests of tuberculosis—entrance into which, or at least residence for any time in which, is necessarily accompanied with the greatest risk. Systematic visitation in Edinburgh under the direction of Dr. Philip has brought to light the great frequency with which the tuberculous patient, for one reason or another—often from pecuniary considerations—changes his residence. Thus in the clientèle of the Victoria Dispensary, it was found that no fewer than 41 per cent of the patients had changed residence within two years, thus multiplying the infected areas.

If according to the rule already mentioned we multiply by 10 the mortality in Montreal from tuberculosis—for the year 1908—given in the vital statistics as 711, we get the startling figure of 7,110, representing the incidence of the disease in our midst, and if, as Dr. Philip says, the number may be doubled without exaggeration, we have 14,220 tuberculous persons in the city, or about 4 per cent of the entire population. This contraction of the area in which insurance can be developed, taken

in conjunction with the losses from accepted risks, which eventually become claims through tuberculosis, represents a source of weakness and waste, which none but a suicidal policy would surely dare to ignore.

The incidence among children is also found to be of startling extent. According to tests made recently on 728 children from the tenement house section of New York City, 28 per cent showed signs of tuberculosis either of the joints, glands or lungs.

If the percentage of tuberculous children recently ascertained by an investigation in Stockholm, Sweden (1.61 per cent), were applied to the schools of the United States, there would be 273,700 children between the ages of 8 and 15 who are positively affected with tuberculosis.

While we have not full statistical information as to the number of children affected by tuberculosis in the public schools of Montreal, recent investigations in various other cities point to a numerically large class in need of special provision. An investigation by Dr. Theodore B. Sachs, of Chicago, based on seventy-seven families, representing 266 children, in which one or both of the parents were infected, showed 29 per cent of the children with a pronounced tubercular infection. Examination of 728 boys and girls, under ten years of age, taken from among the recipients of a one-day fresh air excursion during the past summer at the Sea Breeze Fresh Air Home of the New York Association for Improving the Condition of the Poor at Coney Island, indicates that from 25 to 30 per cent are infected with tuberculosis. Other studies in Boston, Cleveland, New York or elsewhere show even more startling results. The latest observations from Vienna indicate that from 50 to 75 per cent—or even over—of school children under 14 already suffer from tuberculosis. The dispensary records of the Chicago Tuberculosis Institute, involving several thousand families, and the records of the Visiting Nurse and the United Charities involving many more thousand cases, bear out the same general proposition.

Dr. Philip says: "Every day I am more impressed with the frequency of tuberculous lesions in infants and young children. While statistics of mortality in childhood emphasise the frequency of disease at this age, there is reason to believe that infection is far more common than the death rate would indicate. The disease lies latent—it may be sealed in glands, or limited elsewhere by cicatricial tissue—for long periods, until a fresh disturbing cause re-excites to activity." Among the school children of Edinburgh, personally examined by Dr. Philip, and submitted to three definite tests, no fewer than 30 per cent were found to present stigmata of tuberculosis.

This is an aspect of the situation which the large industrial insurance companies will feel obliged to watch carefully. In one of these com-

panies, 8,000 children under 10 years are insured. Allowing that 30 per cent of these are infected or liable to become infected with tuberculosis, the imminent loss can be readily computed.

In addition to all the recorded and suspected cases of tuberculosis, we must take into account the mortality indirectly due to that disease, but ascribed to other causes. According to Dr. Philip's observations, 70 per cent of the mortality among children is either directly or indirectly due to tuberculosis.

From the medical reports all over the world we also glean the fact that a very large proportion of autopsies of cases ascribed to various other diseases reveal tubercular lesions. The records of post-mortem examinations, according to Dr. Philip, show that at least one-third and probably one-half of all persons dying, bear traces of tuberculosis in one shape or another.

Our domestic statistics have not been carried as far in this direction as might be wished, but we can without fear of exaggeration take the statistics of the older countries as a safe basis for our calculations, the probability being, however, that by this method we may be led to underestimate, rather than exaggerate, the vastness of the problem which confronts us.

The situation is undoubtedly a gloomy one, but it is not by any means hopeless. Indeed Dr. Philip says: "The consumptive patient nowadays occupies a platform of hopefulness previously but little dreamt of. His horizon to-day is brighter with promise than ever it has been." The world-wide awakening to the universal danger, and to the necessity for preventive measures, has within the past two decades resulted in an encouraging diminution of the ravages wrought by the great White Plague. In Germany, which has led the way in the Anti-tuberculosis Campaign, statistics published by the Imperial Gazette show that in recent years there has been a steady decrease in the number of deaths from tuberculosis, and especially from tuberculosis of the lungs. In urban centres the death rate per 100,000 fell from 226.6 in 1903 to 192.15 in 1908. In England, as a result of efficacious legislation, mortality from tuberculous diseases has steadily lessened until now, when the mother country yields the lowest death rate from tuberculosis.

Dr. Philip has pronounced the great reduction in mortality from tuberculosis in England and America during the past fifteen years one of the most remarkable facts in the history of medicine. The gratifying result has been attained, in part, by the general advance of sanitary science, and the adoption of well-devised measures directed against overcrowding and dirt, which tend to breed tuberculosis as they do other infectious conditions.

Special interest attaches to the remarkable decline in tuberculosis in the city of Liverpool, from the circumstances that the city was one of exceptionally rapid development at a period when little or no attention was given to sanitation.

As long ago as 1843, a Royal Commission was appointed to inquire into the health of the great cities of England, and the reports of the Commission show, that whilst as a rapidly growing seaport, Liverpool was exceptionally liable to the importation of disease of all kinds, the insanitary condition of the city was such as to most favour the spread of disease. It was at this period that deaths from tubercular diseases were at their maximum.

The condition of the dwellings was very bad, something like 140,000 people living under conditions which constituted, so far as tuberculosis was concerned, a gigantic experiment upon man.

In the process of years, a growing knowledge, and increasing Parliamentary powers, enabled measures to be directed against these conditions. Very considerable housing operations were taken in hand, insanitary dwellings were removed, and upwards of 2,000 houses erected by the Corporation for the poorer classes, an exceptionally abundant water supply provided for the city, large additions made to the sanitary staff, greater supervision of food supplies, widening of streets, improvement of drainage and scavenging, stricter measures in regard to the prevention of overcrowding, and the provision of hospital accommodation.

Of more recent years, several specific measures have been brought into vogue, namely, the distribution of cards containing sample instructions to consumptives and those who live with them. This was commenced in 1899, and a voluntary system of notification followed in 1901. A compulsory notification is now applicable in the case of pauper consumptives, careful attention is paid to the disinfection of houses, and periodical visits are made to the homes of all the poorer patients.

Cards relating to the danger of spitting, etc., have been distributed amongst employers of labor, and in other suitable places. The examination of sputum is carried on at the University Laboratories. The medical inspection of school children has recently opened up new avenues of action. The staff of the Consumption Hospital and Sanatorium, and of the Dispensaries, work in close harmony with the Health Department, and finally a very special attention is given to the question of tuberculosis in milk, and to the health of the cattle supplying the city with milk.

In regard to the improvement effected by these various sanitary measures, it may be stated that, in 1885, the rate of the mortality

amongst the male population from phthisis stood at 2.7 per 1,000, whilst in 1907 it stood at 1.9. The rate amongst the female population, giving the figures for the same periods, were 2.2 and 1.1, a diminution in this latter case of one-half.

May we not hope for equally good results when the plan of campaign now being carried out in Montreal will have had time to bear fruit?

The city of Edinburgh also affords significant evidence of the influence exercised on tuberculosis by the institution of organized and co-ordinated effort. In addition to less definite agencies, there has occurred in Edinburgh, from 1887 onwards, the gradual evolution of an anti-tuberculosis scheme, including the dispensary, with its system of domiciliary visitation, the sanatorium, the hospital for advanced cases, the working colony, and finally compulsory notification.

Charts prepared by Dr. Philip show, that from 1887 onwards, the mortality from tuberculosis in Edinburgh has fallen progressively. It was remarkably rapid in the decade from 1887 to 1906, showing a fall per 10,000 of 8 or 42.1 per cent. "It seems fair," says Dr. Philip, "to associate this to some degree with the development of the completer organization. Since the tremendous mortality from tuberculosis has been realised, the work of treatment and prevention has become more and more active and universal. The movement has been greatly advanced by recurring international congresses and conferences in which the opinions of representatives from all nations have been focussed and crystallised, but the lack of efficient organization and co-ordination of measures militates against the complete success of the general movement. The ineffectiveness of individual efforts in suppressing the disease has been clearly shown in the history of the anti-tuberculosis work for the past few decades. Many agencies are called for, to do active service in this work. But from the first we should bear in mind the necessity of co-ordinating the activities of all the fighting elements in this great modern alliance, so that duplication and waste of energy shall be avoided, while each is aided to work in the field where its efforts can be most effectively and immediately applied." That commercial gain is an acknowledged motive on the part of insurance workers does not interdict their co-operation. Dr. C. A. Baer, secretary of the Wisconsin Anti-Tuberculosis Association, states frankly that the greatest hope of the future will be in the commercial enterprises which will be well paid for instituting reforms.

"Exterminate the tubercle bacillus, and tuberculosis will survive only as an historical monument," says Dr. Philip; and again, "If communities, as communities, are to benefit practically by the discovery of the tubercle bacillus, to the extent which the discovery warrants, there

is clamant need for a vastly wider organization and co-ordination of measures than has yet been realised."

"If tuberculosis is preventable, why not prevent it?" exclaimed King Edward, on hearing the dictum of the scientists. Why not?

"The campaign against tuberculosis is a warfare on uncleanliness and wrong habits of living. To win the fight, the foul air of the dark tenement must give way to clean air and health-giving light, building laws must forbid the erection of houses that do not provide a reasonable minimum of air space, light and ventilation; work-rooms must be clean, well-lighted and well-ventilated; spitting on floors and sidewalks must be stopped; and in a hundred other ways healthful habits must be acquired and a higher standard of living secured." (Alex. W. Wilson, Chicago, Tuberculosis Institute, 2nd Annual Report.)

Dr. E. S. Bullock, a cured patient and active worker in Silver City, New Mexico, says: "We are coming to recognize clearly that the root of the evil must be attacked by prevention, not cure, and that it would have been better for civilization, if all the money expended in attempts at cure had been directed to the accomplishment of prevention, instead. It is, however, our business to care for the sick as well as to prevent sickness, and after infection has occurred, it becomes our plain duty to do all we can for the unfortunate person on whom the parasite has fastened. This is where the Tuberculosis Dispensary finds its specific task."

Dr. Livingston Farrand, Executive Secretary of the National Association for the study and prevention of Tuberculosis, New York, writes: "That one means of prevention is the destruction of the cause, is obvious; that an equally important adjunct in accomplishing the same end, is the ability of individuals to resist the attack, is a matter of observation and experience. Our efforts, therefore, must be directed along either or both of these two lines, to eliminate centres of infection and to increase the resisting power of individuals. It is the more definite attack upon centres of infection and the immediate procedure necessary to reduce the dangers of the situation that present specific opportunity and permit of a relatively definite programme."

Dr. Edwin A. Locke writing of the municipal anti-tuberculosis work in Boston says: "All members of the family of a tuberculous individual are systematically sent or brought to the clinic for examination. This work is principally done by the visiting nurses. A surprising number of children have been found to be infected. Experience has shown that where patients are left to come voluntarily, only a small percentage of cases are ever discovered. A considerable portion of the nurses' time is spent in following up delinquents and bringing individuals to the clinic

for examination. The routine work of history taking, etc., is done by the nurses. Each of the nurses is assigned a definite section of the city, under the direction of a superintendent of nurses. Nothing has been so gratifying and encouraging to us as the success which these nurses have attained in their work and we regard them more and more as the all-important agents in the crusade."

In the "Transactions of the 4th Annual Meeting of the National Association for the Prevention of Tuberculosis," Dr. Locke testifies as follows: "The most important and far-reaching educational work has obviously been done in the course of the daily visitation of consumptives in their homes by the dispensary nurses. One single investigation gives evidence of the effectiveness of this type of educational work. Seven hundred and sixty-four cases who were instructed by the nurses at the clinic were subsequently visited in their homes and observations were made as to the accuracy with which instructions about the disposal of sputum were being carried out. Two hundred and twenty-eight did not expectorate, 338 burned the sputum, 51 used cuspidors and 149 were careless in the disposal of the sputum."

Of the results achieved in the anti-tuberculosis field by the Red Cross Sisters in Germany, Dr. Pannwitz writes: "To them is due not only the most happy results of the work, but gratitude, love and respect. Daughters of the people, trained for their work, they know the people, they understand the people, they feel with the people! They have their allotted districts in town and country, and in these districts they go their daily rounds from morning to night, in summer heat and winter cold, in rain and storm, in sorrow and joy, looking for sickness, want and hunger. They are under strict injunctions to call the doctor's attention to even the slightest suspicion of tubercular symptoms, and having detected what they know to be a *bona fide* case, to make the authorities acquainted with it, and see that the patient is brought to one of the large sanatoria for the cure of consumption. In this way the spread and the infection of the disease is checked, and we may bless these good 'sisters' whose unselfishness, love of humanity, pity for the suffering, common sense, strength, tact, and womanly tenderness, enable them to do what no man could do, and few other women would care to do. Under no religious rule, but at liberty to come and go as they please, they feel themselves called to work, solely by the example of Him who went about doing good."

Writing on "Public Aspects of the Prevention of Consumption" Dr. Philip says: "The tuberculosis dispensary should be for every city and district the uniting point of all other agencies. It should be an isolated institution, but form an integral part, indeed the centre of a

great network of operations. To the dispensary, tuberculosis patients of the poorer classes, and patients with chronic colds and persistent ill-health should be invited. Tuberculous patients presenting themselves at infirmaries, hospitals and other charitable institutions, should be directed to the tuberculosis dispensary. Employers of labour and heads of public works should be apprised of the existence of the dispensary so that invalid employees may be directed thither. The public should be made aware that the dispensary is prepared to answer all inquiries regarding tuberculosis and to advise in a given case what is best to be done. The dispensary should constitute a centre for the dissemination, in the widest fashion, of information regarding prevention and treatment. Every step in the gradual development of the Edinburgh scheme has strengthened my belief in the efficacy of the tuberculosis dispensary as a base for further operations. In this belief, I recommend to every considerable community the establishment of such an institution, which will serve at once as a developmental centre and uniting-point of other agencies."

From the above outline of the field of work covered by the Tuberculosis Dispensary it will be seen that the value of such an institution as an instrument of preventive medicine can scarcely be over-estimated. We were fortunate in having such an excellent and successful model as the Royal Victoria Dispensary, Edinburgh, to keep before us in planning the Royal Edward Institute of Montreal. But I am pleased to be able to tell you that in addition to all the valuable features of the Edinburgh Dispensary, we have introduced a number of new ones, which add to the attractiveness, the efficiency and the popularity of our institution and make it, in a sense, unique.

You will perhaps allow me briefly to show you in what respect it differs from, and even leads all other dispensaries. As you are all aware, at the ordinary hospital dispensary, a patient is merely examined and advised as to the treatment he is to follow. In certain cases, he is given the necessary medicines, but the influence of the dispensary goes no further. The Tuberculosis Dispensary has a much larger programme. At the Royal Edward Institute, a patient who presents himself for inspection is welcomed as a guest of the institution, which has a sun-parlor and a roof-garden, in either of which he may recline in a comfortable chair, propped up with pillows and wrapped in warm rugs. A bowl of nourishing soup is served to each patient every day. An open fire is an inviting feature in cold weather. To a nurse in charge, the social history of the patients is given, after which the medical history is taken up by the medical officer. Examination follows in one of the well-equipped examining-rooms. In addition to a regular physician,

there is a staff of consulting physicians, who, on special days of the week, devote a certain number of hours to the examination of patients and to work in the bacteriological laboratory. The patient is advised how to care for his health, to regulate his diet, live in the open air and rest as much as possible. He is also instructed in all the steps necessary to prevent infection, especially as regards the disposal of sputum. Special cups for this purpose are given to the patients with printed instructions how to use them and why. The patient's home is visited by the Inspector and also by a Dispensary nurse, who both examine the conditions there, point out how they can be improved, make a report to the Institute covering the case on certain scheduled lines and see that disinfection is carried out when necessary. In addition to inspecting the house, one of the doctor's duties is to hold a "march past" of the household so that other cases of infection may be detected as early as possible. In cases of extreme poverty, financial aid is given. The Ladies' Relief Committee of the Hospital look faithfully after all the indigent and helpless families of tuberculous patients reported. Bed-ridden patients are regularly visited and cared for.

Necessary medicines, disinfectants, and proper nourishment are dispensed when the patient's condition seems to call for such aid. A selection is made of likely patients for hospital treatment and, in the case of a patient discharged from a hospital, he is kept under supervision for a time in order to insure the best results. The Dispensary nurse is expected and trained to be a guide to tuberculous patients and their friends, in all matters concerning conditions of living and methods of fighting the White Plague. She is also prepared to answer inquiries from any source, on questions concerning the nature, prevention, and cure of tuberculosis. A tabulated list of houses visited is being made, with details of sanitary and other conditions.

I have been given to understand that the Insurance Companies, realizing the economic necessity of preventive measures in fighting tuberculosis among their policy-holders, are making the experiment of sending nurses to the homes of those affected. The idea is highly commendable, and I hope it is only the first step in a systematic campaign against the deadly White Plague. But if I might be permitted to make a suggestion, I would say that much better results can be obtained for the Cause in general, at no greater expense to the Companies, by utilizing the services of our Institute in dealing with cases of tuberculosis, and offering to the Institute such support as is possible to aid it in the solution of the problems of prevention and cure of the dread disease.

Not only must the death-rate from tuberculosis and the incidence of the disease steadily dwindle as a result of the Dispensary service, but

the general improvement in living conditions following its labours and influence must inevitably lower the death rate and incidence of all other diseases of a social character.

The persistent crusade against dirt, foul air, overcrowding, and dangers of infection, if it gains any victories at all, must win all along the line. Thus, for every patient won back from the White Plague, or insured against infection, it is safe to calculate that two, three, or more shall have learned how to live, and how to protect themselves against other forms of disease.

I should like briefly to mention some of the things that have been accomplished by the nurses of the Royal Edward Institute, since the opening of the Dispensary by His Majesty the King, on October 21st, 1909.

During the months of November and December 645 consultations were held. Of this number of patients, 90 were examined for the first time with the result that 39 were discovered to be tuberculous.

The highest number of patients examined in any one day was 28. Seventy-two new cases were reported to the Dispensary, some by doctors, others by institutions, private citizens, etc. The nurses paid 519 visits to patients in the two months.

Of provisions dispensed at the Institute, over 1,500 quarts of milk and large quantities of fresh eggs have been given to the patients, besides the daily bowl of soup to each, already mentioned.*

As the Institute is becoming better known, the attendance is growing rapidly, many new patients presenting themselves each week for examination.

Some very important observations have been made as a result of the nurses domiciliary visitation. For instance, the number of infected houses in various streets has been carefully tabulated. It is a significant fact that in 72 of the houses visited, more than one case of sickness has been discovered in each, and sometimes three, four, even five patients have been found successively under one roof.

Veritable nests of tuberculosis have been revealed in certain sections of the city. In one East End street between St. Catherine and Craig streets, cases have been located in Nos. 88, 90, 90a, 92, and 98—that is, in five out of ten adjoining houses.

In one street, in a period covering four years, 54 cases of tuberculosis were found, in another, 46 cases, in another 39 cases, and so on. Thirty-six patients among those recorded have changed their residence two, three, even four times, since the disease declared itself, thus grievously

* During the month of January, 433 consultations were held, 67 new patients were registered, 33 cases were reported and 330 visits were made by the nurses.

multiplying the infected areas. The total number of infected houses visited by our nurses is 344.

The Inspector's report shows that 713 visits were made by him, 6,600 cuspidors were given away, and 1,160 pamphlets were distributed.

These figures, as well as a few taken from the Sanitary Inspector's report for 1908—which shows that 264 dirty houses and 3,544 dark rooms were visited—give a sufficient glimpse of the wide field to be covered by the Dispensary Nurses.

To close these remarks, may I quote an inspiring passage from Dr. Philip's address delivered at the opening of the Royal Edward Institute. He said:—"As the movement grows, the Royal Edward Institute will continue to be the centre of development and the connecting link between the various agencies which may come to concern themselves with tuberculosis in your city. By the evidence which your accumulating facts will afford, you will be able to influence the municipality and local authorities regarding sanitary improvements. In this way they will be compelled to exercise the far-reaching powers they already possess. Where these are insufficient you will be able to hasten legislation so that large powers may be granted. From the facts which accumulate regarding school children, you will be in a position to approach the education authorities and so obtain the correction of faulty conditions of school life, and, it may be, the establishment of open air schools..... In the great humanitarian warfare against Tuberculosis, Canada has a chance to lead the world aright. She has come in at a fortunate moment. In the past there has been a good deal of stumbling in the dark and advance has been uncertain. Progress has been prevented by prejudice, misconception, and even self-interest. Canada, happily less disturbed by tradition and old institutions, can take the direct course towards the goal you have in view."

THE ORGANIZATION OF THE BOARD OF HEALTH OF MONTREAL IN REGARD TO CONTAGIOUS DISEASES.

BY

J. E. LABERGE, M.D.

Gentlemen: The Department of Infectious and Contagious Diseases, which I have the honour to represent and direct, does not, in my opinion, receive from the medical profession generally in this city, the assistance to which it is entitled. I may even go so far as to say that sometimes—more especially in connexion with the declaration of infectious diseases—a few physicians are actually hostile in the attitude which they assume towards the Department.

This being so, I have considered it desirable, in order to promote the better administration of the Department, to appear before the Medico-Chirurgical Society for the purpose of explaining our methods of procedure, and to call the attention of my esteemed confreres to the bye-law which governs the city. The bye-law to which I particularly refer is No. 105, Section 37, which reads as follows: "Every physician who has under his care within the limits of the City of Montreal, a case of illness such as small-pox, typhoid fever, diphtheria, or any other contagious or infectious disease, is bound, within twenty-four hours, to report it to the Health Department with the name of the patient, number of the street, and the house wherein the patient resides."

In addition to this I may also quote bye-law No. 51, of the Board of Health of the Province of Quebec, which you will perceive renders it obligatory for every physician to notify the Department of any case of infectious or contagious disease which he may be called upon to treat. Bye-law 51 reads as follows:—"When a physician decides that the person whom he has been called upon to visit is affected by one of the maladies named in article 50, he shall, within 24 hours, notify the Health Authorities of the locality wherein the infected person resides."

These regulations, therefore, inasmuch as they have not been repealed, render it the duty of every practitioner to announce any case of infectious or contagious disease which may present itself in the exercise of his profession. Moreover, it is a duty which we owe to society, and it is unworthy of the noble profession to which we belong to ignore this obligation under the pretext that, because the city does not recompense us for these certificates, we are consequently not compelled to conform to the provisions of the bye-law. Again, we are failing in our duty as good citizens, and, I may even say, lacking in courage, if we do not make these municipal and provincial declarations owing to a desire to gratify our patients.

More than half of the infectious and contagious diseases occurring in this city are not reported to the Department of Health. We may possibly explain this by saying that the medical attendant forgets to do so. Why does he forget? Because, he will tell you, he has not the opportunity afforded at the house of the patient where he makes his diagnosis of the disease to conform with the bye-law. However, the Board of Health has endeavoured to overcome this difficulty by issuing certain forms, specimens of which I will hand round. These booklets are distributed gratuitously by the Department, and you can obtain them at any time by application to the office. All you have to do is to tear out a blank form from one of these books, state the nature of the malady, sign and

seal it, drop it into the nearest letter-box and it will be transmitted without postage.

We are all active workers in a great country, and our ambition is to see it prosperous and flourishing. Now, imagine a workman in a factory, who witnesses some daily loss suffered by his employer. Would it be right for this workman to make no effort to avert the trouble either because he was not paid to do so, or because he was afraid to look after his master's interests lest he should give somebody offence. Contagious diseases are a prolific source of loss of life. And this applies equally to a nation as it does to a municipality. It is, therefore, the obvious duty of every good citizen to make the declaration to which I have referred. The Board of Health would then be in a position to adopt the necessary measures for limiting or blotting out the disease. I would even go further and state that, in my opinion, it would injure the medical profession to take away from it the privilege of notifying cases of infectious or contagious diseases. We must not forget that our profession carries with it responsibilities which it is our bounden duty to preserve intact.

I will now pass on to the personnel comprising the staff of the contagious diseases department. There are three clerks, one typewriter, four disinfectors, two drain inspectors, two nurses, seventeen district medical inspectors, one diagnostician, and one chief to direct the Department.

When a medical man has notified the office of a case of contagious disease, whether by telephone or by letter, a clerk—always the same one—inscribes the declaration upon a special form. This form contains the following particulars:—

(1) The name of the street; (2) the nature of the malady; (3) the name of the patient; (4) the name of the attending physician; (5) the name of the official who carries out the disinfection of the infected dwelling.

All this information is necessary for the purpose of combating contagious and infectious diseases. Every morning a selection is made of the different addresses which we receive. Four different lists are prepared for the disinfectors, and the different addresses are so arranged that each disinfector has a limited circuit to work in. These inspectors report at the office at 8.30 every morning and are given the lists which have been prepared for them for their day's work.

If the patient remains in the house, the disinfector must placard the house indicating that it is infected by some contagious disease. In the case of a house which the patient has left, or has been removed to a hospital, or—in case of death—after burial, the official immediately proceeds to disinfect it; and, in accordance with the wish of the family

physician, he will disinfect either one or two rooms, or the entire house. In all such cases this official should note, upon the occasion of his visit, the following points which are necessary for the statistician:

(1) Nature of illness; (2) name of patient; (3) age; (4) name of father, his profession or employment; (5) date when the illness commenced; (6) date when the diagnosis was established; (7) date when the Health Department was notified; (8) date when the placard was affixed; (9) date of recovery or death of patient; (10) date of removal of placard, and at the request of what physician; (11) number of persons in the house; (12) length of residence in Montreal; (13) length of residence in the house; (14) if patient has been absent from the city—how long? (15) address of milkman; (16) name of school attended by children in the house; (17) where treated—at hospital or home? (18) probable source of the disease; (19) condition of the subsoil, and of the ground floor; (20) whether first or second storey; (21) condition of the house. How lighted? How ventilated? (22) where patient was employed, with how many other employés? (23) how many privies there are in the vicinity, and whether there is any connexion between these closets and street drainage.

Every morning the disinfector reports to the Department of Contagious Diseases. He announces the work which he has performed, and again continues his daily work in the manner which I have described.

Every case of contagious or infectious disease which may be reported to us is recorded and filed. Each record is numbered, and contains all the particulars of the illness so that, from this card, should inquiries be made, all the details are at hand. There is an indexed volume in the Office of the Department in which we inscribe the name of the street, and the number of the house infected. Under this address is the number of the card upon which is recorded all the information concerning the illness which was reported to us. This record informs us by whom it was reported, date of commencement of illness, number of residents in, and condition of the house; the social condition of the occupier, number of rooms; how these rooms are lighted and ventilated, whether the patient was sent to a hospital, who disinfected the place, condition of drains, if these drains have been tested, and the general nature of the surroundings.

In order to facilitate our work we have a different colour for each contagious disease: for example, blue indicates typhoid fever; red, scarlet fever; yellow, small-pox; green, measles, and so forth. This work is carried out by a clerk in the office. The cards are placed on file, and if, for some reason or other, anyone is anxious to learn whether such and such a house which he wishes to rent or to purchase is in a sanitary condition, or whether it has been infected by some contagious disease, we

are in a position to afford the necessary information. We can advise him upon this point from the 1st of January, 1906, up to the present day. Every year additional information is added to the records of preceding years. Consequently, in years to come, the office of contagious disease will form a valuable sanitary record of dwelling-places in the city of Montreal.

We have also two employés who, when a case of contagious disease has occurred and the case is finished, visit the infected houses. It is the duty of these men to examine the condition of the drains. Should any defect be discovered notice is sent to the proprietor to remedy the trouble immediately. Moreover, these two officials report upon the work performed by those employed to disinfect houses, and whether they have rendered satisfactory services. All their remarks are carefully annotated.

A medical consultant is at the disposal of the public in order to assist any member of the profession, who may wish to have his diagnosis confirmed by the City Hall expert; he is also at their disposal to see whether effective measures have been adopted in order to prevent the dissemination of contagious disease; he will also visit the families of poor people who are not in a position to call in a medical man, and are afflicted with some form of contagious disease.

Two nurses are employed by the Department to attend to sick children, they explain to the parents how to carry out the treatment prescribed by the doctors. These nurses have special instructions never to treat cases on their own responsibility, or to recommend a family to consult any particular physician. If the school authorities are agreeable they may treat at the schools children suffering from slight affections; for example, ringworm, pediculosis, or some other minor complaints. This does not prevent children suffering from these affections, from attending school. But when permission is not given the nurse to apply treatment at the school—no pupil suffering from ringworm or pediculosis is allowed to continue attendance owing to the danger of spreading the disease. The nurses take with them from the schools a list containing the addresses of these children who have been sent away on account of some trouble; they make a note of the diagnosis, visit these children at their homes to make sure that the children are being treated, or to urge the parents to consult, without delay, their family doctor. They also go, upon the order of the Health Department, and visit poor families where there may be a case of sickness.

Finally, seventeen district medical inspectors complete the list of employees of the Department of Contagious Diseases. The City of Montreal has been divided for the purpose of inspection into seventeen districts—a district for each physician. It is the duty of these medical

inspectors to overlook, from a sanitary point of view, the condition of their districts, to inspect schools, manufactories and dwelling places. They devote their whole time to the City from 9 a.m. to 5 p.m. They are not permitted to invite children to consult them at their office, and I have not yet received any complaint in regard to this matter. These gentlemen visit the schools, as far as possible, once a day. Moreover, they are expected to make a general inspection of all the children at least twice a year. At their usual morning visits to the school, they only see those pupils who have been absent, or others whom the Principal may suspect to be suffering from some form of contagious disease; they may then proceed in accordance with the wishes of the Principal although they will examine one class daily in schools under their supervision. When they have completed a school, they will commence again, and continue this portion of their duties up to the end of the year.

Medical Inspectors are also obliged to make a complete inspection of the school building twice a year, in order to assure themselves of the sanitary arrangements of the school. If they discover sick or unclean children they recommend the Principal to send them home, accompanied by a closed card, indicating to the parents the nature of the affection from which they are suffering, and advising them to consult their family physician.

During the summer vacation these officials visit different public establishments, situated in their particular districts, and examine the hygienic conditions existing, and in how far the municipal and provincial laws are observed. The establishments visited are groceries, meat-markets, manufactories, bakeries, barber-shops, laundries, night-refuges. The knowledge which the Board of Health has derived through the medium of these district medical inspectors has been of the highest importance for promoting the good administration of the office. Moreover, the moral influence which has been obtained by this system of inspection is enormous—especially in schools, work-shops, and other public places. It is an excellent method of making known and enforcing the law. Indeed it has been ascertained, in some factories that the employés have only had impure water to drink, that the closets were uncleanly—everything was unsanitary, that nearly all grocers keep the milk in improper places for good preservation, that they leave their foodstuffs exposed to pollution by the dust of the roads, and by animals which stray about the streets in search of something eatable, that in many barber-shops no attempt is made at cleanliness or hygienic surroundings, that many of these establishments propagate infectious diseases. These places have received notice to remedy this state of affairs; some have done so,

others have done nothing. Upon the occasion of a second visit we shall have more satisfaction, and shall accomplish a good deal in the end.

I believe that by repeating to people over and over again, that such and such a practice is to be utterly condemned they will eventually conform to the regulations prescribed by the law, and I am of opinion that this method of procedure is preferable to more drastic measures.

In the schools we now find much less pediculosis and very rarely scabies; the pupils are much cleaner, and in all educational establishments the chairs and tables are adapted in such a fashion that the light falls from the left. The classes are less crowded. Many schools, it is true, are insufficiently ventilated, but, later on, considerable improvement will be effected.

With this organization, which we have now maintained for nearly two years, we have been enabled to trace mischief to its source. If the focus of infection—I will take scabies, for example—is found in a factory, the workpeople carry the pest into their homes and their children carry it into the schools. Even if some suitable treatment be afforded a pupil attending a school, he will nevertheless be liable to return with scabies if his parents, or member of the family are not treated as well. The trouble will always afflict the family, if the origin of the disease is in a manufactory and no steps are taken to eradicate the mischief. As soon as we have information that children frequenting such and such a school live in houses infected by contagious diseases, we immediately warn the inspector of the district of the fact; he, in his turn, warns the principal of the school not to receive those children exposed to contamination.

Lastly, district medical inspectors have made inquiries in their respective districts relative to the number of cases, and the cause of the outbreak of typhoid fever which has severely afflicted Montreal. They have gone to the houses of their confreres, and have inquired how many cases of typhoid they have attended since the 15th of October last, and whether they know of any cases which have been improperly designated as typhoid. They have inquired in regard to the probable source of the disease and whether the Board of Health was notified of its existence.

Well, gentlemen, it has been proved that we have in our midst a strange state of affairs. We know that typhoid has reigned as an epidemic in certain quarters of the City of Montreal. In one of the districts from the 15th of October up to the 1st of January we found 625 cases of typhoid fever and only 25 were reported. The origin of the infection we have been told is possibly due to the water supply of those particular districts.

It is only by the medical inspection of districts that we are in a position to learn the actual state of affairs, and to put people on their guard against dangers which may threaten them; also to take the necessary measures to protect themselves—for example, to boil the water, and to isolate cases of illness.

Again, there is another card besides the one which I have mentioned above, and which we call "The card of Illness." The object of this new card is to register the work accomplished by the Department in its efforts to prevent the dissemination of disease from house to house. This record gives the name, and date of the visits of the attending physician; the date when quarantine was imposed; the date of disinfection; the name of the official who was called upon to utilize preventive measures in accordance with the instructions of the Health Department; the sanitary condition of the building; who has examined it; the school or manufactory frequented by members of the family. The card to which I refer is entered up by the third official employed by the Health Department. This card registers the work of those employed by the Department of Contagious Diseases. Consequently, if somebody has neglected to adopt certain preventive measures prescribed by this Department in order to check the infection we are in a position to trace, from this card, who has neglected his duty.

I hope, gentlemen, that knowing our organization—knowing the working of this organization, the medical profession will kindly afford all the assistance which we have a right to expect. I beg of you earnestly to send us regularly a list of your contagious cases. This is the starting point of our work in stopping the dissemination of contagious diseases. If from November we had known of the invasion of typhoid in St. Henry, St. Cunegonde, St. Denis, Delorimier, we could have accomplished then what we have accomplished since—the arrest of the epidemic; for I am happy to say, the outbreak is diminishing every day. These declarations are for the Health Department and nothing is known outside, and if occasionally a clerk is guilty of some indiscretion which might injure you with your clientèle it is contrary to regulations and instructions of the Department. I beg you to report it to us, and we will remedy it at once.

In conclusion, Gentlemen, I have to thank you very much for your kind attention. Any additional information which you may desire, I shall be happy to afford you as far as it lies in my power.

PECULIAR COURSE OF A STAB WOUND OF THE LIVER.

BY

JAMES C. FYSHE, B.A., M.D., Bangkok, Siam.

On the morning of December 12, 1909, about ten hours after death, the body of an adult male Siamese was sent to the Bangkok Police Hospital for examination.

The following conditions presented themselves:—Well nourished, extremely muscular male, 5 feet 4 inches tall, rigor mortis present, post-mortem lividity slight. Two parallel stab wounds just internal to the right nipple. They are 2 inches long and extend from the lower margin of the 4th rib down and inward in the direction of the external intercostal muscle. On reflecting the pectorals, the 5th rib is found cut through twice, just internal to the costo-chondral junction. One cut is ¼ inch internal to the other and a small wedge of cartilage lies clean cut out in situ. In the right pleura is a small amount of fluid blood. The right lung is healthy, slightly collapsed and shows no injury of any kind. The other thoracic viscera are normal. The diaphragm on the right side shows about the middle and corresponding in direction with the external wounds, an incision 2 inches long, the lower angle of which is 3½ inches away from the costo-phrenic junction in a straight line. In the abdomen is fluid and clotted blood. The right lobe of the liver is found to be stabbed right through from the diaphragmatic to the inferior aspect. The wound on the inferior surface is 1½ inches long and is situated just to the right of the foramen of Winslow. The cystic duct has been nicked at the inner end of the wound. There is no damage to any part of the abdomen.

The points that would appear to be of special interest are:—

1. That the knife should have completely missed the right lung. According to Cunningham, Text-Book of Anatomy, page 935, "after expiration, it (the basal margin of the lung) reaches in the mammillary line the lower margin of the 6th rib." Here the wound in the diaphragm, almost an antero-posterior wound, was two inches long, and its lower margin was 3½ inches away from the costo-phrenic junction.

2. That a knife which made a wound 1½ inches long on the inferior surface of the right lobe of the liver in the position above detailed, should have done no harm to the duodenum or the upper pole of the kidney.

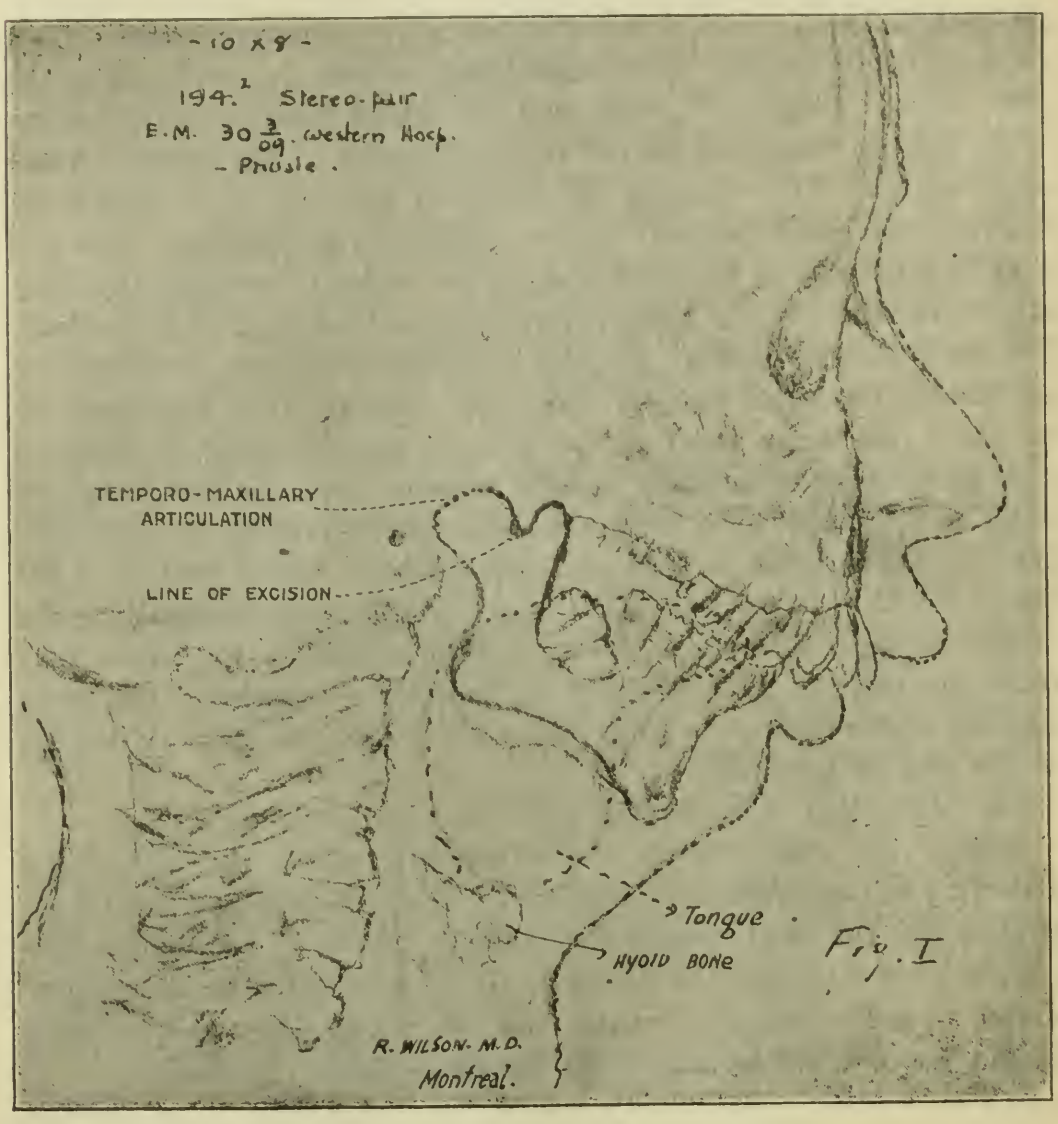
REPORT OF A CASE OF EXTREME MAL-OCCLUSION WITH DESCRIPTION OF THE MEASURES TAKEN FOR ITS RELIEF.

BY

J. S. IBBOTSON, D.D.S.

Dental Surgeon to the Montreal General Hospital, Montreal.

While in adults cases of bony or fibrous ankylosis in the temporo-maxillary articulations are usually seen and treated by the general surgeon, in early life this affection with its attendant deformity and mal-



Tracing of Skiagram.

occlusion calls for the co-operation of the dental surgeon, and in severe cases taxes to the utmost his mechanical skill and resource.

During the last twenty years I have seen, and have been called upon

to treat, several cases of mal-occlusion of varying degrees resulting from articular injury or dislocation at birth, extraction of deciduous teeth, naso-pharyngeal obstruction associated with mouth breathing, and so forth. None of these cases have seemed to me especially worthy of record, but the case here reported is in many respects so unique that I feel that it well deserves publication.

FIG. II.—Front view of Interdental Splint.

Case Report.—E., a girl aged six years, was first seen by me in consultation with Dr. E. M. von Eberts, in March, 1909. The case had been under observation since June, 1904, at which time there was marked fixation and lack of development of the mandible. In June, 1905 (more radical treatment having been declined), under a general anæsthetic forcible extension of the lower jaw was attempted, with, however, but slight improvement in the range of movement. At this time the mandible showed marked angulation at the junction of the ramus and body, that is, the inner angle approximated to a right angle instead of being obtuse. The use of wooden wedges was subsequently advised but the treatment was never seriously carried out. The range of movement gradually decreased, and the deformity due to the backward displacement

FIG. III.—Interdental Splint, showing position of bridge, posterior extension of lateral mass and upper articular surface.

and angulation of the mandible was further exaggerated by the practice of pressing food upwards between the lower incisors and the hard palate, which resulted in the flattening of the arch.

When seen in March of the present year, the following local conditions were noted:

In profile the deformity described by the Germans as "bird-face" was most pronounced. Viewed from in front, the muco-cutaneous margin

of the lower lip was invisible and lay behind the upper incisors. The latter were visible and prominent, and could be covered only by a special effort in drawing the upper lip down. The arch of the mandible was flattened and the lower incisors were fan-shaped in arrangement with a distinct convexity upwards,—the middle incisors being in contact with the mucous membrane of the hard palate one centimetre behind the al-

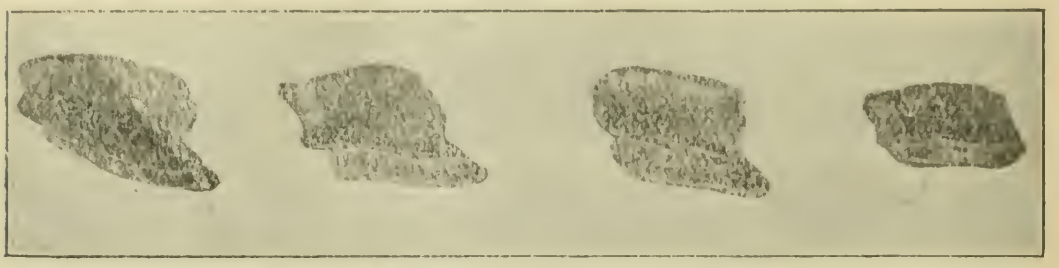


Fig. IV.—Lateral view of Interdental Splint.

veolar process carrying the upper incisors. Although no ulceration of the hard palate was present, an appreciable separation of the incisors from the surface of the palatal mucous membrane could not be effected. There was apparently complete ankylosis in the temporo-maxillary articulations. On palpation the posterior margin of the ramus could be felt to take a downward and backward direction towards the mastoid process of the temporal bone.

These observations were confirmed by skiagrams which, in addition, showed the secondary nuclei to be very greatly crowded, the posterior molars being directed forward instead of upward owing to the obliteration

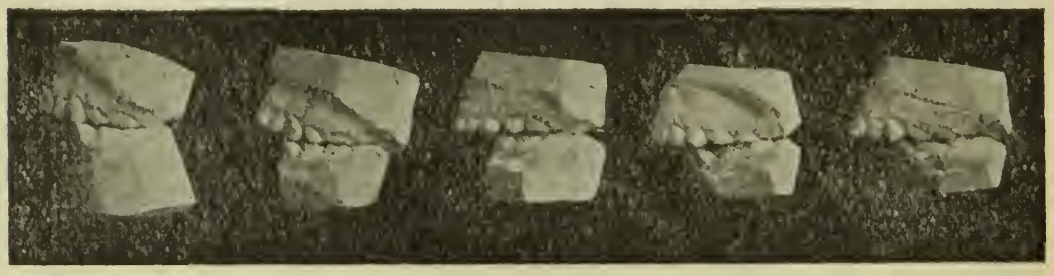


Fig. V.—Shows gradual reduction of posterior displacement of mandible (reading from right to left).

of the broad inner angle between the body and the ramus. The skiagrams further showed the condyles to be in the normal position, but very greatly broadened, the antero-posterior diameter of the neck of the condyle being as broad as the normal ramus at this age. (Figure I.) As a consequence of this deformity and fixation of the jaw, the lingual and sublingual muscles were crowded towards the spine, causing diminished respiratory space.

On April 2nd, under a general anæsthetic, the following operation was performed by Dr. von Eberts:

A vertical incision, two centimetres in length, was made about one centimetre in front of either external auditory meatus, the posterior portion of the zygomatic arch removed on both sides, and the condyles excised. No trace of the normal articulations could be found. About one centimetre was removed on each side, which permitted the separation of the incisors of the mandible from the palate to the extent of two centimetres, together with a slight forward movement. With impression compound casts were taken of both the upper and lower jaws, and a temporary wedge inserted between the teeth on one side pending the preparation of permanent interdental splints. Forty-eight hours later a permanent splint was placed in position. This consisted of two lateral masses for insertion between the upper and lower dental articulations connected by a narrow body to permit of the passage of food. (Figures II and IV.) Within two weeks the first splint became quite loose and could be readily removed and reinserted by the patient. Solid food could be masticated without difficulty, and an improvement in the general con-

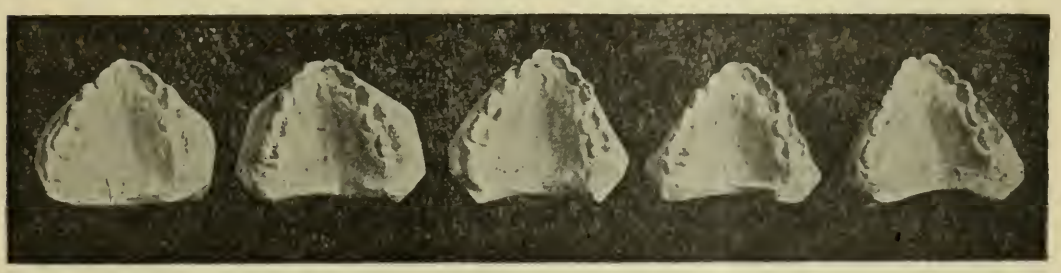


FIG. VI.—Shows gradual broadening of upper dental arch (reading from right to left).

dition of the child was noted. Subsequently the range of movement was gradually increased by inserting larger splints,—the series so far employed being shown in the accompanying illustrations. It should be mentioned that the last splint had been so constructed as to produce a moderate grade of pressure on the inner surface of the lower alveolar process in front, with a view to promoting a gradual reduction of the posterior displacement of the mandible. The pressure of the body of the splint is also designed to reduce the angulation above referred to. The child has been taught to remove the interdental splint at frequent intervals and to employ forward traction on the lower jaw by hooking the forefinger behind the arch. This practice has already aided in the reduction of the posterior displacement and of the flattening of the arch. (Figures V and VI.)

With the eruption of the second teeth (which will provide secure anchorage for a metal interdental splint), together with the development of the jaw which may be looked for at puberty, it is anticipated that a normal profile may eventually be obtained.

THE

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EDITED BY

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PROFESSOR JONNESCO'S DEMONSTRATION.

We need make no explanation or excuse for publishing this month in our columns of original matter, a description by one of our colleagues of a demonstration given in New York by Professor Jonnesco of Bucharest, of the use of spinal anæsthesia for operations on the head and upper trunk. Dr. W. W. Chipman gives a plain statement of what he saw and heard, and it is exactly the kind of statement our readers require, because all are interested, and few have the opportunity of seeing for themselves. This modification of spinal anæsthesia has been so much exploited in the daily papers, and has been so incorrectly reported, that we feel sure our readers will be grateful to Dr. Chipman for information they can trust.

MEDICAL INFORMATION FOR THE PUBLIC.

Many tendencies in human nature run in curves of increase and decrease; lately it seems as if we were high on the up-wave of a laudable desire to make known to the public many things connected with the healing art. There is no reason why this should not be, except that every wise man knows that it is scarcely worth while to explain things to people whose habit of mind and whose training do not fit them for understanding the things explained. There is no secrecy nor need for secrecy about the science of medicine itself, but the appreciation of even simple physiological facts needs a mental

preparation which is not given outside of scientific schools. Since many things cannot be well explained, it seems better not to attempt any half-explanations.

A case in point is the exploitation of local anæsthesia in the hands of Professor Jonnesco. The advantages of the strychnine-stovaine combination injected into the spinal canal are said to be that it is absolutely safe; this is not yet proven; the use of the method itself is already old, as age goes in this rapid century, although the public, accepting what the newspapers say, do not know this. The man on the street thinks that Professor Jonnesco invented the use of anæsthesia in the spinal canal (this statement is made by a London illustrated weekly), that he is the first to operate upon the conscious patient, that it is very good of him to tell us all about it, and a fair number think that he is the first to demonstrate local anæsthesia at all. The result, looked at from any standpoint, is to put Professor Jonnesco in a false position. We are perfectly aware that Professor Jonnesco may not be in the slightest degree responsible for all these quarter-truths which the newspapers state. The more is this likely, because a similar publicity has lately been given to a prominent surgeon in an American city with regard to two operations for the removal of foreign body from the œsophagus. Knowing the surgeon concerned, we know he had nothing to do with this publicity, nay, that he has felt hurt by it; yet the papers have described these signs and wonders, and lo! they are operations that have been performed for years past in all parts of the world. To any one who understands, the details of the operation sound as uninteresting and as crude as would a discourse on the electric telegraph given by a motorman to the electrical section of the Royal Society. One would feel tempted to lead the misguided motorman aside and say gently to him: "If I were you I would'nt talk on that subject to these men: although you have only lately learned of the electric telegraph, these men have known about it for some time."

We know too well that in the medical profession there are men who seek to advertise themselves; the profession at large deprecates only a little less than it despises such tendencies, and properly refuses to be represented by such men. If medical facts are to be publicly presented, and if anyone has the requisite time to do it, well, there is no reason why it should not be done; let the first requirement be that they must be *facts;* let medical items for a paper be edited and overseen by some one qualified to judge, before they appear: it is hardly likely that any reputable newspaper would allow its financial page to be printed without the supervision of some one who under-

stood finance. To come from important to unimportant things, let there be some editing of medical information for the public, or else let the information be withheld, lest, to the man who knows, the paper put itself in the light of something at which to laugh.

TYPHOID FEVER.

The citizen stands between two voices. The first, that of the press, shouts that typhoid fever is at the moment a serious menace to our lives; and the second, that of the Health Authorities of the City cries aloud that things are not at all serious. The citizen knows that there are some hundred of cases of a preventable disease in the city, and that there are serious defects in our water supply, in the inspection of our milk supply, and in our methods of sewage disposal. He is, therefore, inclined to side with the press, and call for a rectification of these evils; and we agree with him. This is the more true when an official of the city states:—"Last year there were 60 deaths, and this year there are only 101. Another official states that many of the so-called cases of typhoid are "intermittent fever" (whatever that may be); and the official voice says, "Be calm! Do not alarm yourselves!" As if a death, let alone one hundred and one deaths, from a preventable disease were a matter of no importance. As if one hundred and one deaths were not sufficient to worry about.

And yet one cannot refrain from doubting the knowledge and capacity of the newspapers for administering the Health Department. The one which displays the greatest manifestation of activity issued a "Commission" of enquiry into the nature of the water-supply. Apparently the investigation lasted less than a week and the report was contained on half a sheet of paper. The finding was that the Montreal water was contaminated with "intestinal bacteria." To be entirely comprehensive the report should have added that there is no supply in the world drawn from the surface of the earth, which does not contain "intestinal bacteria," if by that is meant the colon bacilli, and its allied forms. A report of this nature merely inflames the public mind, without adding to existing knowledge.

The report of the first Conference upon City Problems held last December under the auspices of the City Improvement League, has just been published, and is well worthy of study by all Montreal citizens. The discussion upon the water problem is of most timely interest. What is striking is the unanimity with which every speaker, French and English, from Dr. Armstrong, who opened the debate,

to Alderman Ward, who closed it, pointed out the need for filtration. The only weak note sounded in this connexion was by Mr. Janin, but even he acknowledged that it must eventually be established, although he held that his scheme would be sufficient for some years to come.

Here it deserves note that the Montreal Water and Power Company have removed their intake from its previous reprehensible position below the outfall of the Verdun sewer. They have removed it, if we mistake not, to 1000 feet from the shore. Nevertheless there continue to be more cases of typhoid in the outlying parts of the city and suburban municipalities supplied with this water than in Montreal proper with its separate supply. In his speech at the Conference, Mr. John Kennedy, the late Harbour Master, showing the weakness of Mr. Janin's argument, seems to have given the explanation both why this should be so and why Montreal is unique in having her epidemic of typhoid not in the summer but in the early winter months. Mr. Janin had admitted that the sewage from the villages and houses along the north shore of Lake St. Louis (above both intakes) is a source of danger, but had laid down that the upper funnel-like opening of the Lachine Canal, 1500 feet wide, diverted all the shore water, so that it poured into Montreal Harbour. But, pointed out Mr. Kennedy, at the close of navigation in November the Lachine Canal is also closed, so that during the winter months the north shore water is no longer diverted, but finds its way over the intake of the Corporation, and, we may add, must also affect the Water and Power Company's intake below the rapids. He pointed out that the additional epidemic of typhoid fever last spring coincided significantly with the temporary closure of the canal for repairs—an admirable example of proof by " concomitant variation."

A NEW DENTAL CLINIC.

The Montreal General Hospital has recently added one more to the many channels in which it has served the public of Montreal so long and so successfully, by the opening of a new Dental Dispensary.

Last Spring the Dental Dispensary, which had up till then been maintained in the city by the Dental College, and in which all dental students, both French and English-speaking, received clinical instruction, was abandoned. Provision was made for the French-speaking students by the University of Laval. This left the English-speaking students out in the cold, and unless clinical facilities could be provided for them, it became evident that within a very few years there would cease to be any English-speaking dentists practising in the city of Montreal. In

explanation of this statement, it may be remarked that the matriculation or registration requirements for the study of dentistry in this province are of such a character as practically to prohibit the settlement in the city of dentists who have been trained outside of this province.

This condition of affairs was brought to the notice of Mr. James Crathern, the president, and Mr. Harry Stikeman, a member of the Hospital Board. They at once undertook, in a spirit of enlightened public interest, to bring the matter before the General Board of the Hospital. It was felt that apart from preserving the continuity of English-speaking dentists in the city, provision for the alleviation of suffering and disease through the teeth was as needful as the like provision for any other organ of the body, and ought to be included among the activities of a General Hospital. This view was adopted by the Hospital Board, and steps were at once taken to provide the required facilities. Dr. Geo. E. Armstrong, Dr. J. S. Ibbotson, the surgeon-dentist to the Hospital, and Dr. D. J. Berwick, the head of the Dental School of McGill University, took up the matter energetically, and the hospital authorities having at considerable cost converted a part of their building formerly used as a chapel into suitable administration and laboratory rooms, a fully equipped and modern dental dispensary of six chairs is now in full operation and filling a long felt want.

The new dental clinic is open to the public between the hours of 9 a.m. and 1 p.m. daily, and the number of applicants for treatment already foreshadows the necessity for greatly increased accommodation in the near future.

The department is equipped with all the most modern dental appliances, and students attending the dental courses at McGill University have the privilege of attending all the daily clinics under the following list of surgeon-dentists, who supervise and demonstrate all the branches in dentistry.

9 a.m. to 11 a.m.	11 a.m. to 1 p.m.
Monday, Dr. G. S. Armitage.	Dr. J. S. Ibbotson.
Tuesday, Dr. J. S. Dohan.	Dr. D. J. Berwick.
Wednesday, Dr. F. G. Henry.	Dr. R. W. Watson.
Thursday, Dr. E. J. Stuart.	Dr. H. T. Throsby.
Friday, Dr. J. T. McCrae.	Dr. J. B. Morrison.
Saturday.	Dr. T. J. McGregor.

Dr. R. S. Woollatt, a graduate of the Royal Dental School of Toronto University, is in charge of the Department as Superintendent.

ARTHUR A. BROWNE.

On January 26th, 1910, there passed from among us after a long illness a man who was beloved by everybody who ever knew him. He might well be called the "Beloved Physician," for he brought comfort and relief to many a bedside. His quiet, gentle ways, his sympathetic manners, and his careful attention to details and everything that would benefit his patients made him esteemed and respected wherever he went. Dr. Browne was not a fashionable practitioner though he had many fashionable patients, and he gave as much, and perhaps more, attention to the poor than to the rich. Nothing was too much trouble, and money considerations were nothing to him, for he only looked to the welfare of his patient and not to the fees which would come from his assiduous attentions. The writer on one occasion looked at his visiting list and asked him from how many on that list he expected adequate remuneration; and he answered, about one-third. He was truly a magnetic physician, for his mere presence in the sick room brought relief and comfort. He was very humble as to his abilities, though they were great, and he never hesitated to obtain the advice of specialists if he thought they could throw any light on the case. He did not attempt to do things which he thought others would do better, and so his patients had the utmost confidence in his opinion and advice.

Arthur Browne was born in the Eastern Townships in 1848, of Irish parents, and although he had no war-like tastes, came of a military family. He graduated in 1866 as B.A. of McGill, and after a year or two in business (which was not congenial to him) entered the Faculty of Medicine and graduated M.D., C.M., in 1872, the same year as his old and close friend, Dr. Wm. Osler. After spending a year abroad he started practice in this city, and for some years had an uphill fight, for he had no private means. However, his abilities and good qualities became known, and soon he had one of the largest practices in the city. He devoted himself especially to obstetrics, a department of medicine in which he established for himself an honorable reputation.

In 1883 he was appointed Professor of Obstetrics in McGill University, succeeding the late Prof. Duncan MacCallum, at the same time taking charge of the University Maternity Hospital. But, at the end of three years, owing to his increasing practice and his distaste for the drudgery of teaching, he resigned his professorship, much to the regret of his colleagues. Although he did not remain a member of the Medical Faculty of McGill his friendship with the professors of that Faculty continued to his death. His interests were always those of McGill, and no medical function was thought to be complete without the presence

of Arthur Browne. Dr. Browne had a fine literary taste and was one of the best read men in general literature in the profession. He was a good classic, and the writer who was with him in Rome in 1894 benefited much by his classical knowledge. He had also the eye of an artist, knew a good picture, and loved it. He had a fine collection of pictures, well chosen and delightful to the connoisseur. We shall rarely again see such a man, for his class is passing away—one who was a family physician and at the same time the family friend and adviser. Arthur Browne was essentially a noble-minded gentleman. His sterling character, his high sense of honour, his consideration for others, his quaint, dry humour and his professional abilities will be hard to equal and no one will have other than pleasant memories of him. An old medical friend thus writes of him: "I have met and known many men of the medical world, but no one among them drew me to him as did Arthur Browne, and for the rest of life's journey I shall ever miss his wholesome companionship." He leaves a wife, three sons, and one daughter to mourn their loss.

PATENT MEDICINES.

The folly of the people who put their trust in nostrums and cure-alls is a matter of continual wonder. The annual sale of these compounds in Canada amounts to eight million dollars a year. The returns for the United Kingdom for the year ending March 31st, 1909, indicate that 550 million packages of patent medicines were sold at a cost of 28 million pounds. More than half the business of every retail drug store consists in the sale of advertised preparations, the ingredients and formulæ of which are unknown. This is in spite of the fact that under the law in every province in Canada, no one is allowed to prescribe medicines except members of the medical profession, and no one is allowed to dispense a prescription save a physician or a licensed graduate of a recognized college of pharmacy.

It is a counsel of perfection that the people should not continue to poison themselves with the morphia, cocaine, and bad alcohol which these preparations contain, or squander their money in return for drugs which, even if harmless, are sold at an exorbitant profit. It then becomes a question if they could not be supplied with pure drugs at a reasonable price, to take the place of the concoctions which at present they are bound to consume.

Within the last year or two nearly all the Canadian firms dealing in drugs and chemicals wholesale have united in one organization, which

is probably the largest of its kind in the world, with a paid up capital of five million dollars, carrying a stock worth two million dollars, employing 900 work-people, and 70 travellers.

This company is about to make an experiment in supplying drugs direct to the people which is well worth watching in the interests of the medical profession, which ultimately is the public interest. The Company assures the purchaser that their preparations are not cure-alls, that they are not intended to replace the physician's prescription, but are merely household remedies to be used in emergency, of which the formulæ will be furnished to any physician or druggist on request. Nothing could be worse than the old system. There is this, however, to be said for it, that the preparations supplied are for the most part harmless, even if expensive. This new venture by a powerful Company in supplying direct to the public preparations of known compositions will, let us hope, do something to remove old evils. Let us also hope that it will not engender new ones.

Reviews and Notices of Books.

TEXT-BOOK OF GYNAECOLOGICAL DIAGNOSIS. By DR. GEORGE WINTER, Professor and Director of the Royal University, Frauen Klinik, Königsberg, Prussia, with the collaboration of DR. CARL RUGE, Berlin. Edited by DR. JOHN G. CLARK, Professor of Gynæcology in the University of Pennsylvania.

This admirable book is a translation by Dr. R. Max Goepp of the third German edition and its usefulness for readers of English has been much enhanced by the work of the distinguished American editor. Professor Winter has been a teacher of gynæcology for many years; at first for eight years in Berlin and since in Königsberg. His collaborator, Dr. Carl Ruge, has long been known as a creator and high authority on the microscopical diagnosis of gynæcological disease. Professor Clark has supplemented the translation from the German by annotations, which he says "have appeared essential to the wider adaptation of the book to this country." The book is divided into two sections: viz,. General and Special Diagnosis. In the section on General Diagnosis the various methods of examination, manual and instrumental, microscopical and bacteriological, are fully described. In the special section the normal anatomy is thoroughly treated, as being the first thing essential to be known before morbid findings can be recognised and their significance estimated. In this section each tissue and organ in all its parts is thoroughly considered

macroscopically and microscopically. The microscopical part is the work of the distinguished Carl Ruge. Abnormalities of development also get their due share of attention. The urinary system is dealt with as fully as are the organs of the sexual system proper. Analytical Diagnosis is the title of the last chapter, and we regard this as one of the most valuable in the book. It includes sections on the causes of hæmorrhage, of amenorrhœa, of dysmenorrhœa, of sterility, and the analytical diagnosis of abdominal tumours. The diagnosis of abdominal tumours is often very difficult, and the experienced if honest practitioner will have to admit many mistakes. A careful study of this last chapter will help to avoid them. The book is splendidly illustrated. No less than 346 pictures of various kinds, plain and coloured, many of them original, are distributed throughout the book. The reproductions of microscopic sections are admirably clear. Though a translation from the German by a German the English of the book is excellent throughout. All careful teachers and students must be grateful to the distinguished authors and the no less distinguished editor for this most excellent work.

W. G.

A Text-Book of Physiology: for Medical Students and Physicians. By William H. Howell, Ph.D., M.D., LL.D., Professor of Physiology, Johns Hopkins University, Baltimore. Third edition, thoroughly revised. Octavo of 998 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $4.00 net; half morocco, $5.50 net. Canadian agents, The J. F. Hartz Co., Ltd., Toronto.

In reviewing former editions of this work we characterised it as the best text-book of physiology ever produced in America, and referred especially to the excellent and readable style in which it was written. The present edition is sure to maintain its position in the very front rank of physiological text-books. The increase of size to the extent of about sixty pages has been effected by the extension of existing sections rather than by the addition of new ones. Practically every section shows signs of careful revision. Under muscle and nerve an account of Einthoven's string galvanometer is included for the first time. The list of enzymes found in the body is increased from 17 to 18 by the addition of nuclease. The paragraph on the pituitary body is extended by the addition of some new work, and among the recent workers in this field we are pleased to find the name of Reford. We do not know of any book that represents more faithfully the present state of physiological knowledge, and we unhesitatingly recommend it to all who are interested in the science.

W. S. M.

SURGICAL DIAGNOSIS. By DANIEL N. EISENDRATH, A.B., M.D., Professor of Surgery in the Medical Department of the University of Illinois; attending surgeon to the Michael Reese and Cook County Hospitals, Chicago. Second Edition, Philadelphia and London. W. B. Saunders Company, 1909. Cloth $6.50 net; Half Morocco $8.00 net. Canadian agents the J. F. Hartz Co., Ltd., Toronto.

The success of this book is indicated by a call for a second edition within two years after the appearance of the first. The book in general is very comprehensive and includes the diagnosis of nerve conditions, the more recent views regarding the localization of the motor centres in the cortex of the brain and of the infective as well as the intra-cranial infections.

The chapter on abdominal conditions is particularly full and has been prepared with great care. It deals with the acute abdominal affections including acute cholecystitis, infections of the liver, kidney, peritonitis, appendicitis, the perforative conditions of the stomach, duodenum and intestines.

Particularly valuable are the clearly brought out points of differential diagnosis. While the diagnosis in typical conditions are for the most part, fairly conclusive, the difficulties in atypical conditions can hardly be exaggerated and it is here that a work of this kind, by bringing up the different alternatives, symptoms, etc., is of value to the student in teaching him to think and in giving him a perspective, and to the practitioner in placing before him quickly and in convenient form the information that he desires. The same may be said about tumours.

The book is well illustrated. The chapter on fractures and dislocations is very well illustrated indeed, and of considerable value are the photographs and skiagrams of the same lesions placed side by side a method of illustration used so successfully by Helferich and by other authors since. The author has included a chapter on skin diseases, cystoscopy and methods of diagnosis in renal lesions. Altogether the book is to be highly commended.

G. E. A.

VISITING NURSING IN THE UNITED STATES: YSSABELLA WATERS. The Charities Publication Committee, 105 East 22nd street, New York, 1909. $1.25, post paid.

In the United States there are now 566 visiting nurse associations with a total staff of 1,413 nurses. In the past year 112 new organizations were formed. A description of visiting nursing, with a history, a chapter on principles, and a directory of all visiting nursing organizations in

the United States, is contained in this book, published by the Charities Publication Committee of New York, under the title "Visiting Nursing in the United States." The author, Miss Waters, is an associate of Miss Lillian D. Wald in the Henry Street (Nurses') Settlement on the East Side of New York. The book is a succinct record of this excellent charity.

Soured Milk and Pure Cultures of Lactic Acid Bacilli in the Treatment of Disease. By George Herschell, M.D., London. Second Edition. H. J. Glaisher, 57 Wigmore St., Cavendish Sq., London. 2s. 6d. net.

Eight thousand copies of the first edition of this little book were sold in less than a year. It was, as we said upon its appearance, a concise and trustworthy guide to the use of lactic acid ferments in disease. The book is the outcome of a scientific spirit, and is a nice example of the application of laboratory methods to the cure of disease. The limitations within which the use of fermented milk may be employed are carefully set forth, and its value is certainly not over-estimated. We are glad to note that the exploitation of the practice for commercial purposes has ended in failure. There yet remain the rather limited number of cases in which it is of great value.

Burghard's Operative Surgery. By 26 British Authors, edited by F. F. Burghard, M.S., F.R.C.S., Teacher of Operative Surgery in King's College, London, Surgeon to King's College Hospital, Senior Surgeon to the Children's Hospital, Paddington Green. London: Oxford Medical Publications; Toronto: D. T. McAinsh & Co. Four Vols., illustrated, price $36.00.

This comprehensive work on operative surgery in four large volumes is the outcome of the rapid advance of modern surgery. At the present day no one man is a complete master of all the details of operative surgery. As a surgeon gets older and more experienced he naturally has a predilection for those operations in the performance of which he is most proficient and which he has had greater opportunities in dealing with—consequently it is now a rare thing to see a system of surgery written by one man. In the production of this work no less than twenty-six surgeons take part and they fairly represent modern British surgery. To give our readers an idea of the standing of this work and its value to operating surgeons it is only necessary to mention that Moynihan writes on the stomach and spleen, Mayo Robson on the bile passages and pancreas, Butlin on the tongue, tonsils and pharynx, Bland Sutton on gynæcological abdominal operations, Stiles on the breast and tuberculous affections of the bones and joints, Barker on hernia, Thurburn

on the spinal canal and cord, Owen on hare-lip and cleft-palate, and so on. Space does not permit of a more full enumeration of the men and the subjects on which they write. All are chosen for their special knowledge of the subjects treated and the result is a most comprehensive, full, and successful work of reference. It is essential that every operating surgeon should possess it and to the beginner it will be invaluable. The books are printed in large type and profusely illustrated with most excellent pictures giving a very graphic representation of the different operations in their various stages. Operations on the eye and ear are fully described and there is a chapter by Capt. Hongton, R.A.M.C. on local and spinal anæsthesia which is a notable addition to a work on operative surgery. There is also a well illustrated chapter on plastic surgery by T. P. Legg. It is impossible to treat each section in detail, some being necessarily better than others, but as a whole we can heartily recommend this work to all surgeons young and old. It is not only a text-book but a reference hand-book of operative surgery.

PRACTICAL MEDICINE SERIES: Vol. IX. SKIN AND VENEREAL DISEASES: MISCELLANEOUS. By WILLIAM L. BAUM, M.D., and HAROLD N. MOYER, M.D. The Yearbook Publishers, 40 Dearborn St., Chicago, Ill, 1909.

The section on skin and venereal diseases is well and clearly written and the treatment is up-to-date. Under "Miscellaneous" many subjects of general interest are touched upon; such as heredity, the autoprotective mechanism of the animal body, alcoholism, the physician and the press, and some medico-ethical problems, workingmen's compensation, criminal abortion, the centenary of ovariotomy.

MINOR AND OPERATIVE SURGERY, INCLUDING BANDAGING. By HENRY R. WHARTON, M.D. Lea & Febiger, Philadelphia, 1909.

The seventh edition of this work has recently been issued to the profession. It especially appeals to the student, as chapters on bandaging are most complete, including the application of Plaster of Paris bandages. In the paragraph on skin-grafting no reference is made to the method of Reverdin, which is not without value in selected cases. In the paragraph on bone wax, it might have been well to mention the method introduced by Mosetig-Noorhoff rendering the cavity sterile by the use of an electric burr and the introduction of a blast of sterilized hot air before the introduction of the wax.

In the article on the use of Roentgen rays, more prominence might have been given to the modern method of rapid exposure, and also to the distortion produced when the tube is not properly placed in relation to the patient. One would like to have seen more reference to the neces-

sity for two exposures in every case of fracture, an antero-posterior, and a lateral, and some reference to the difficulty on the part of even experienced surgeons in reading a particular plate.

Under anæsthetics, it might be desirable to give more detail in the methods of using the various local anæsthetics. The articles on sutures, hemorrhage, and wounds, are all well written. Reference is made to the opsonic treatment. Wright's name might reasonably have been quoted. The reference to actinomycosis is very brief, and might, in view of the increasing frequency in the recognition of the disease have been entitled to more space. A word on the spirocheta in view of the importance of recent research, might have been introduced with advantage.

The article on fractures, is, as the author claims, brief. A reference to the importance of carrying out only provisional dressings rather than an attempt at elaborate reduction of the fracture where patients are to be removed, would help to dispel the popular idea that a fracture must be reduced and elaborately bandaged without regard to transportation or change in medical responsibility. Almost as much space is given to fracture of the coccyx as to that of the ribs. One wishes that some prominence had been given to the great rarity of this accident, and thus correct the belief too commonly held that it is a common injury.

In the treatment of fractures no credit is offered to Mr. Arbuthnot Lane for his remarkable work in improving the technique of the treatment of certain fractures, although there is an illustration showing his plate in position, vide page 432. Several of the important operations are so briefly explained that it would be difficult for an inexperienced surgeon to carry out the method as described. The articles on minor operations, amputation and ligations are little changed. On the whole the work commends itself to the profession. The illustrations are good, the print clear, and the index complete.

J. A. H.

CATECHISM SERIES. Edinburgh, E. & S. Livingstone, Public Health, Part I; Water, Part II; Air and Ventilation, Part III; Sewage and its Treatment, Part IV; Vital Statistics, Dwellings, Meteorology, Part V; Epidemiology, Food, Burial, Disinfectants, Hospitals.

This series covers about 250 pages with 50 pages bound separately in each part. They are all in the second edition, and are done by W. Robertson, M.D., D.P.H., Medical Officer of Health, Leith. In so far as we have been able to test the answers the information contained in them is quite accurate and sufficiently complete for the purpose for which it is intended.

BIOGRAPHIC CLINICS. Vol. VI. Essays concerning the influence of visual function, pathologic and physiologic, upon the health of patients. By GEORGE M. GOULD, M.D. Philadelphia, P. Blakiston's Son and Company, 1909. Price, $1.00 net.

Dr. Gould by persistent reiteration has gained a hearing in the world of medicine, and has influenced practice for the better. One need not subscribe to his claims in their entirety; but one must agree that many patients have profited by his propaganda for greater accuracy in adjusting lenses to the needs of the eye.

THE COLLECTED PAPERS OF LORD LISTER, Member of the Order of Merit and sometime President for the Royal Society, Knight Grand Cross of the Danish Order of the Daneborg. In two volumes, illustrated, price $12.75. London: The Oxford Medical Publications; Toronto: D. T. McAinsh & Co.

These two splendid volumes come to us from The Clarendon Press with all the dignity and beauty which Mr. Frowde knows so well how to impress upon his books.

These volumes were prepared for the press by a Committee consisting of Sir Hector C. Cameron, Sir W. Watson Cheyne, Bt., C.B., F.R.S., Rickman J. Godlee, M.S., C. J. Martin, M.D., F.R.S., Dawson Williams, M.D., F.R.C.P. The work is a memorial to Lord Lister, who, on April 5th, 1907, attained his eightieth birthday. The volumes contain all the papers and addresses which Lord Lister considers of permanent interest and importance. In them are recorded the progress of the great evolution in surgery which has occurred within our own time. The text of the papers is preceded by a brief introduction giving some account of the state of surgery at the time when Lord Lister began his work. One who reads these volumes cannot fail to appreciate the difficulty and complexity of the problem which presented itself to Lord Lister, and the brilliancy of his reasoning and experiment which lead to a solution of it.

In the first volume are contained the preface and the introduction referred to, which extends to 44 pages. Then follows the text of 26 papers upon physiology, pathology, and bacteriology. The second volume is divided into three parts. The first is made up of a series of 27 papers upon the Antiseptic System, beginning with that memorable announcement which appeared in the "Lancet" in 1867. The second part is devoted to surgery, and contains the text of six papers. The volume concludes with four important addresses delivered between 1869 and 1907. As frontispiece there are two portraits which immediately recall the memorable face of Lord Lister to those who have had the privilege of

seeing him. These two volumes are likely to remain for all time as a record of the highest achievement of the nineteenth century.

PROGRESSIVE MEDICINE, Vol. IV, December, 1909. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, 334 pages, with 35 engravings and a colored plate. Per annum, in four paper-bound volumes containing over 1,200 pages, $6.00, *net;* in cloth, $9.00, *net.* Lea & Febiger, Publishers, Philadelphia and New York.

The contributors to this volume are N. T. Belfield, Joseph Bloodgood, John Rose Bradford, David L. Edsall, H. R. M. Landis. The subjects dealt with are: Diseases of the Digestive Tract; Diseases of the Kidneys; Surgery of the Extremities, Tumours, Anæsthesia, and Infection; Genito-Urinary Diseases, Therapeutics. We note a full consideration of Auld's summary of the experience in Montreal in the use of the X-rays for diagnosis of renal calculus. This number maintains the high reputation which "Progressive Medicine" has established for itself.

QUAIN'S ANATOMY. Volume III, Part II. The Peripheral Nerves and Sense Organs. By E. A. SCHAFER and J. SYMINGTON. Eleventh Edition. Longmans, Green and Co., 1909. Renouf Publishing Co., Montreal, Canadian Agents. Price, $4.50. 384 pages.

The book here presented is the equivalent of two thin volumes of the tenth edition, published some fifteen years ago. The peripheral nerves and sense-organs are described in a single volume of very convenient size.

An extended criticism of so authoritative a work of reference as Quain's Anatomy is by no means necessary. The part devoted to the cerebral and spinal nerves shows numerous textual amplifications, without, however, departing from the terseness for which Quain has always been noted. A few new illustrations have been added to advantage, and more coloured plates are seen.

The description of the special senses shows, as is natural, the greatest changes. There are some 40 more pages than in the corresponding part of the tenth edition. Many new illustrations are to be found, and among these the microphotographs of eye and ear structures are worthy of special note. In addition the text is enriched with numerous half-tones and a beautiful coloured plate of the fundus oculi.

The descriptive matter throughout is lucid and authoritative without being verbose. A paragraph as found in Quain is often the equivalent

of a page in another text-book. The subject matter is brought abreast of the latest researches, and the work as a whole is to be highly commended. It will continue to maintain the position it so long has held in the forefront of anatomical text-books.

J. A. M.

THE HARVEIAN ORATION ON EXPERIMENTAL PSYCHOLOGY AND HYPNOTISM. Delivered before the Royal College of Physicians of London, October 18, 1909. By GEORGE H. SAVAGE, M.D., F.R.C.P., Consulting Physician and late Lecturer on Mental Diseases, Guy's Hospital. London: Henry Frowde, Oxford University Press, Amen Corner, E.C., 1909.

Dr. Savage deprecates unduly the intelligence of his readers when he declares about his Oration that: "No one can be more conscious of its shortcomings than myself." It is not an oration. It is a little book of 44 pages. If it was given as an oration it would have occupied three hours in the delivery, and must have been uncommonly tedious to his hearers. A passage like the following must have extracted a groan of agony: "So that we shall not be pouring drugs of which we know little into bodies of which we know less." It is only at the twentieth page that the orator arrives at "what I may call the real matter of my address"; and yet it is difficult to see what it has to do with Harvey. The pamphlet contains a mass of unrelated statements drawn at second hand from the most common-place sources and has little more bearing upon the subject of the discourse than it has upon the object of the Foundation. A good oration may make bad reading. What is so hard to read must have been intolerable to listen to.

THE MEDICAL COMPLICATIONS, ACCIDENTS AND SEQUELS OF TYPHOID FEVER AND THE OTHER EXANTHEMATA. By H. A. HARE, M.D., B.Sc., Professor of Therapeutics in the Jefferson Medical College and Physician to the Jefferson College Hospital, Philadelphia, and E. J. G. BEARDSLEY, M.D., L.R.C.P., Philadelphia. With a special chapter on the Mental Disturbances Following Typhoid Fever, by F. X. DERCUM, M.D., Professor of Nervous Diseases in the Jefferson Medical College. Second edition, thoroughly revised and much enlarged. Octavo, 398 pages, with 26 engravings and 2 plates. Cloth, $3.25, *net*. Lea and Febiger, Philadelphia and New York, 1909.

The first edition of this work appeared ten years ago; the present edition has added a great deal that is of interest from the literature published since that time. The book is an excellent compendium of facts relating to fevers, given concisely, clearly and in good arrangement.

Typhoid fever occupies 300 pages, and this subject is properly subdivided into chapters, which again are well subdivided. The second part, of 100 pages, deals similarly with Variola, Scarlet Fever, Measles, Varicella and Rubella. The whole is well indexed, and the references which are very numerous are stated at the foot of each page.

The work entailed by the preparation of such a book is necessarily great, and its usefulness is corresponding: the authors' personal experiences are given wherever advisable, but only as addenda to the material provided by the literature of the subject. While the reviewer has a light task to perform, it would be unfair not to say that the book is really invaluable to anyone writing upon these subjects, because in one minute he can lay his hand upon an orderly statement of any complication and upon a good bibliography of the same; and this applies equally to the practitioner who seeks for no other purpose than to learn. The style of publication and printing is worthy of the contents.

Medical News.

Dr. Colin C. Sewell died of pneumonia on Wednesday, December 1st, 1909, at Quebec. Dr. Sewell was born in Quebec in 1841, educated at the Quebec High School and then at Edinburgh University where he graduated M.D. He successfully passed the examinations of the Royal College of Surgeons. Dr. Sewell then entered the Royal Infirmary under Professor Symes. After practising in Montreal for a time he then moved to Australia, returning to Quebec a few years later. As a physician he was a man of the highest ideals and the greatest integrity, whose loss his friends and the whole community deplore. As a man he was known far and wide for his love of horses and all outdoor sports; but above all for his manly personality. For many years he was surgeon to the Royal Canadian Artillery in Quebec.

WESTERN HOSPITAL.

The annual meeting of the Western Hospital was held in January. The overdraft for the year was $10,883; and there was also the Credit Foncier mortgage of $40,000. The total liabilities were $53,779. The total assets were $210,739, and the expenditure for the year was $50,386.

Dr. F. J. Hackett, the medical secretary, stated in his report that the total number of consultations for outdoor patients was 10,330 for the year, an increase of 2,845. The number of patients admitted during the year was 1,288. Of these 1,184 were from the city, and 104 from other parts. There were 596 males and 568 females. The deaths were

73, of which 16 took place in 48 hours. The percentage of deaths was 5.67, which, allowing for reduction for those in 48 hours after admission, gave a percentage of 4.43.

The wards of the hospital had been taxed to the uttermost and admission had had to be refused to patients. This want of accommodation applied to private as well as public wards and was especially felt in November and December.

The general secretary, Dr. Geo. T. Ross, stated in his report that the past year had shown every department of the hospital to be inadequate in point of accommodation. The outbreak of typhoid had aggravated the situation, but the growth of the city had had to be taken into account. These conditions had caused their thoughts to revert to the question of enlarging the building, it being evident that the city's growth demanded it, irrespective of extraordinary demands caused by epidemics. However, the committee had felt that the extension scheme must be postponed until existing financial encumbrances were cancelled. Meanwhile the munificence of philanthropists was awaited.

Following officers were elected:—President, Mr. Peter Lyall; first vice-president, Mr. Robert Bickerdike; second vice-president, Mr. J. C. Holden; treasurer, Mr. J. A. Mathewson; general secretary, Dr. Geo. T. Ross.

ROYAL VICTORIA HOSPITAL.

At the annual meeting of the Royal Victoria Hospital Mr. R. B. Angus resigned the office of president, and Sir Edward Clouston, Bart., was elected his successor.

Officials appointed for the year were as follows, their choice being unanimous:—Dr. H. B. Cushing, assistant physician; Dr. F. M. Fry, assistant physician in charge of diseases of children; Dr. C. K. Russell, neurologist; Dr. P. Burnett, dermatologist; Drs. Wr. F. Francis, D. W. McKechnie, J. C. Meakins and C. F. Moffatt, clinical assistants in medicine; Dr. J. K. Goodall, assistant gynæcologist; Drs. F. McKenty, J. W. Hutchinson and W. J. Patterson, clinical assistants in surgery; Dr. A. G. McAuley, clinical assistant in ophthalmology; Drs. H. Muckleston and H. White, clinical assistants in oto-laryngology; Dr. H. B. Cushing, registrar; Dr. A. G. McAuley, assistant registrar.

The report of the superintendent, Mr. H. E. Webster, stated that the number of patients admitted during the year had been 4,200, or an increase of 494 on the previous like period. They comprised 2,424 Protestants, 1,345 Roman Catholics, 344 Hebrews and 87 of other faiths. Of these, 2,142 were free patients, 1,101 were public ward patients (paying fifty cents and one dollar per day) and 957 were private ward pa-

tients. Residents of Montreal numbered 3,104, and 1,096 came from districts outside the city. The total days of hospital treatment aggregated 88,317, as against 84,204 during the previous year, or an increase of 4,113 days. The average number of days in hospital per patient was 21.04, as compared with 22.9 in the corresponding period of 1908.

On January 1, 1909, 237 patients remained in the hospital from 1908, and during the year 4,155 were discharged, of whom 2,420 were well, 1,153 improved, 183 not improved, 163 not treated, and 236 died. There remained in hospital on December 31, 1909, a total of 282 patients. Of the 236 deaths, 82 took place within forty-eight hours of admission. The death rate for the year was 6.02 per cent., or, deducting those dying within forty-eight hours of admission, 3.09 per cent.

In the outdoor department the total number of patients treated was 4,763, and the number of visits of these patients aggregated 32,338—medical, 10,754; surgical, 7,962; eye, 4,508; nose, throat and ear, 5,952; diseases of women, 2,199; nervous diseases, 1,763.

The income for the year was $183,357, while the ordinary expenditure amounted to $171,337, and the extraordinary disbursements involved in renewing the power house and electrical plant, etc., totalled $28,324. Towards this the surplus for the year, $12,019, had been applied and it was hoped that the operations of the coming year would be sufficient to liquidate the balance without encroaching upon capital resources.

Legacies had been received from the estate late S. Carsley of $1,000, and estate late A. T. Paterson of $500.

The gift of a thoroughly equipped motor ambulance from Mr. H. V. Meredith was acknowledged, and it was stated that this gift rendered the ambulance service in summer very efficient and secured to the patient requiring such conveyance the minimum of suffering and delay.

The addition of new medical and surgical departments, while doubtless adding to the efficiency and reputation of the hospital, involved a very great tax upon the accommodation at its disposal and a strain on the ever-increasing staff. The unfortunate visitation of typhoid fever which prevailed during the latter part of the year aggravated this state of things, but with a desire to assist in coping with the emergency thrown upon the medical and nursing resources of the city, the governors resolved to open certain wards that had hitherto been kept in reserve as a safeguard against unforeseen demands, and they resolved also to face the extra expenditure, although aware that the hospital would for a time be exceeding its ordinary income. The apprehensions of the House Committee in reference to finances were relieved by the assurance that several of their number would be happy to contribute to the extra expense, and $9,750 has already been deposited for that purpose.

Those in attendance at the meeting were: Mr. R. B. Angus, president; Sir Edward Clouston, Messrs. H. V. Meredith, Farquhar Robertson, Robert Meighen, Dr. Shepherd, F. L. Wanklyn, Principal Peterson and F. R. Redpath.

OTTAWA MEDICO-CHIRURGICAL SOCIETY.

A regular meeting of the Ottawa Medico-Chirurgical Society was held on January 7th, 1910. The programme was as follows:

1. Biliary Lithiasis—Dr. Prevost.
2. The tenement house problem in Ottawa in its relation to tuberculosis—Dr. Bryce.

Retrospect of Current Literature.

GYNÆCOLOGY.

UNDER THE CHARGE OF DRS. GARDNER, CHIPMAN, AND LOCKHART.

H. N. VINEBERG: "Ligation of Pelvic Veins for Puerperal Pyemia." *Amer. Jour. Obstet.* March 1909.

Patient aged 36. V para. Was delivered by forceps August 12, 1908. Temperature developed five days later. She was admitted to hospital with chills and fever on September 9th. On admission the temperature was 104.4; pulse 110 to 130. Uterus well involuted and not tender. Nothing particularly abnormal was noticed in the pelvis.

The temperature varied between 98 and 105 for several days. Ten days after admission laparotomy was performed. The right ovarian vein was found thickened to the size of one's thumb along its entire length to the vena cava. The intervening structures including the tube and ovary were excised by means of the cautery. The abdomen was then closed.

The day following the operation the temperature ranged between 99 and 101. There were some chills and temperature which rose as high as 105 four days after the operation. After this the temperature seldom ranged higher than 102, but the patient gradually sank and died nineteen days after operation.

At the autopsy a thrombus was found in the vena cava at the entrance of the right spermatic vein. The course of the thrombotic process was from the uterine site of the placenta up along the right

spermatic vein to the inferior vena cava; down this vessel to the bifurcation of the common iliac; down the internal and external iliacs on both sides to both femoral veins and to the pelvic veins which take their origin in the lower segment of the uterus.

The author then makes a study of reports of cases of this kind in literature and states that the results thus far obtained by ligation of the veins and thus lessening the mortality are not marked.

There are records of 19 recoveries in 44 cases operated upon by the extra and trans-peritoneal routes, the latter method presenting a somewhat more favourable result. The results of the operation can be said to be encouraging but that is all, and the future will have to determine whether improvement will follow closer study and earlier operation.

The operation performed with ordinary skill does not diminish the patient's chances of recovery.

The trans-peritoneal route is stated as being the best in the author's opinion. The technique of operation is then discussed in some detail. The advice is given that anyone undertaking this work should first familiarize himself with the reproductions of the anatomical sections made by Kownatzki.

R. H. Paramore: "A Critical Inquiry into the Causes of the Internal Rotation of the Fœtal Head." *Jour. of Obstet. and Gyn. of the B.E.*, October 1909.

In a very careful study of the mechanism of internal rotation the author advances what he considers to be an original view as to the causation of the much discussed phenomenon, internal rotation of the fœtal head.

He reviews in the early part of his paper, very fully, the views that have been advanced as to the causation of internal rotation from the earliest times. He points out that this movement of the head is an accident and results because the fit between the head and the pelvis is a close one and that the musculature of the pelvic floor resists delivery.

The author points out that the inward projection of the ischial spines is an evolutionary incident, being brought about by the change in the direction of the pull of the muscles of the pelvic floor, determined by the erect posture. In the lower animals no such projection of the ischial spine is to be found. This projection inward of the ischial spines has for many years been thought to play an important role in causing internal rotation, but Veit and Varnier have both proved that the bony pelvis has nothing to do with giving rise to this mechanism.

The views that internal rotation results from resistance of the pelvic floor, and also that it arises from the primary rotation of the fœtal trunk, are then discussed.

The more recent view advanced by Sellheim that rotation results from the adjustment of the fœtus as a whole to the pelvic canal is then criticized, the author pointing out that the conditions of the experiments of Sellheim are not analagous to those existing within the living fœtus in the course of labour. He points out that in the living subject the displacement of the pelvic floor is gradual, and that in the living fœtus the increased tension of the extensor muscles of the head cannot be maintained for any length of time as Sellheim seems to indicate.

Olshausen is quoted as stating that rotation of the fœtal trunk anteriorly occurs in many cases before that of the head. He raises the question as to how this rotation of the trunk can be explained on Sellheim's hypothesis as it is impossible to suppose that the trunk, already closely invested by the soft parts, is caused to rotate by the head. If it does not do so it must rotate independently and then this will influence the rotation of the head and either favour it or first institute it.

Olshausen's view is then criticized, and the author states that it is difficult to believe that the position of the fœtal body can cause the occiput to rotate forwards under the pubic arch, Olshausen strongly asserting that the fœtal back almost always turns to the front and forces the head to rotate in this direction.

That flexion of the head is a very important factor in bringing about internal rotation, the author agrees. The usual explanation that when there is a considerable loss of flexion the sinciput occupies a lower level in the pelvis than the occiput and thus meets the pelvic floor first, is open to question.

The author then gives fully his view as to the mechanism of internal rotation. At the end of pregnancy, the muscular fibres in the floor of the pelvis are remarkably well developed, being indeed hypertrophied. "Palpation reveals them as forming veritable fleshy bellies, strangely tender when vigourously pressed against, hardening on coughing and evincing complete proof of their contractile nature." This portion of the pelvic floor is the first called upon to resist the downward thrust of the advancing vertex when the head is well flexed. The coccyx with the muscles attached gives way and an inclined plane is formed down which the vertex is pressed.

When the forehead is posterior, it falls into line behind the advancing vertex and comes to occupy the middle line posteriorly;

the transverse diameters of the pelvis become diminished, whilst the anteroposterior become increased, as the outlet is reached. Then the forehead is forced towards the hollow of the sacrum by the increasing pressure between it and the postero-lateral pelvic wall, a pressure which increases progressively as descent continues.

The persistent occipito-posterior positions are then discussed. In these cases the vertex is forced to occupy a more anterior position nearer the symphysis. The shunt forward of the coccygeal muscles is resisted by the chin which is in contact with the fœtal chest, thus the forehead is compressed somewhat obliquely upwards against the upper part of the antero-lateral pelvic wall. Further descent of the forehead is prevented by the vertex being projected forward in its descent along the inclined plane of the pelvic floor. As a result of these forces and because the transverse diameter of the pelvis is greater than the antero-posterior at the level which the forehead occupies at this time, the latter is compelled to rotate posteriorly by the resultant of these forces. These movements are well illustrated by the means of diagrammatic drawings.

Eventually the forehead rotates into the hollow of the sacrum while simultaneously the occiput turns to the front.

Considerable space is devoted by the author to prove that the forehead does come into relation with the antero-lateral wall as is mentioned above.

In conclusion he states that the factors concerned in causing rotation are:—

(1) the expulsive force from above; (2) the obstructing, central fixing force from below; (3) the shape of the pelvis; (4) the shape, size, consistence and position (flexion) of the fœtal head.

B. Kronig: "Zur Behandlung der Placenta Prævia." *Zent. f. Gyn.* No. 46, 1908.

Hitherto version or the use of hydrostatic bags have been the usual treatment of placenta prævia and these have given on the whole remarkably poor results, a maternal mortality of 6 to 10 per cent. with a fœtal mortality of from 60 to 80 per cent.

Most of these fatal cases died of hæmorrhage, only a relatively small percentage having become septic. Cases have suffered a blood loss in spite of the use of the tampons, of 100 to 1200 c.c.

If the mortality of placenta prævia is to be reduced in our clinics we must learn some method of controlling the hæmorrhage which would be an improvement over those at present in vogue. The hæmorrhage in placenta prævia, especially that occurring in the

post-partum period, arises chiefly from the maternal vessels in the isthmus and upper portion of the cervix.

The implantation of the ovum in cases of placenta prævia is quite analagous to its implantation in tubal pregnancy. The fœtal villi and cells penetrate the mucous membrane and also the uterine wall of the isthmus. As a result of the tearing of the specially richly developed vessels in this area during birth, the hæmorrhage arises. The more the isthmus becomes thinned out in the expulsion of the ovum the greater the increase of the chance against the spontaneous checking of the hæmorrhage from the vessels. It seems natural that in order to check hæmorrhage from this area one must do all that is possible to prevent stretching of the isthmus in the course of birth.

The author believes that abdominal cæsarean section in the earliest stages of dilatation, with uterine incision as high as possible towards the fundus, should be the operation of choice and would meet the above indications.

He then compares the method he outlines with vaginal and cervical cæsarean section performed by Sellheim's method. Both these operations call for interference with the lower uterine segment and in the course of delivery of the child the uterine wall may be torn, as the situation of the placenta leads to its softening. If the placenta is situated on the posterior wall of the uterus, these operations may give a satisfactory result, but as we never can be sure, the author considers vaginal cæsarean section of doubtful value in the treatment of placenta prævia.

In the six cases of placenta prævia in which he has performed classical cæsarean section the blood loss was so slight that in none of them was tamponade necessary. In four of the cases the blood loss was less than 300 grammes. Should the bleeding from the isthmus, nevertheless, be severe he agrees with Sellheim one has the advantage in cæsarean section that one is enabled to obtain a clear view of the site of the field, and is enabled thus better to check it by means of tampons. Should the tampons fail, supra-vaginal amputation is to be recommended.

He then discusses the treatment of cases in which the os is completely or almost completely dilated when coming under observation; and secondly, when the asepsis of the birth canal is doubtful. In the first instance as the isthmus has already been stretched to its widest extent, if bleeding does not cease, version is indicated, followed by manual delivery of the placenta. Should hæmorrhage

then persist massage of the uterus and hot douches should be tried. Should these fail, supra vaginal amputation of the uterus should be performed. This seems to be a radical procedure, but these cases usually bleed considerably afterwards so that the operation enables the hæmorrhage to be checked better than by any other means.

In cases that have been tamponed outside, he recommends when the placenta is situated on the posterior wall, vaginal cæsarean section; when on the anterior wall version by Hick's method. Posterior hysterotomy is out of the question as the infection of Douglas pouch is always ready to follow. If the bleeding is not controlled supra-vaginal amputation should be undertaken.

The children in all his six cases were delivered alive and left the clinic in good condition.

A. Doderlein: "Ueber den Extraperitonealen Kaiserschnitt." *Zent. fur Gyn.* No. 4, 1909.

The author briefly considers the various forms of supra symphyseal Cæsarean section. He then gives in detail the operation he himself is in the habit of performing. Transverse opening of the abdomen, separation of the recti, the bladder is filled so that its contour can be distinctly seen, then the right hand is pushed in between the front and side walls of the pelvis through the loose cellular tissue. The hæmorrhage is very slight. By this means the genital canal is laid open for incision.

The lateral fold of the peritoneum between the uterus and bladder can be seen running on the right side towards the pelvic wall as a white firm band. This is pushed upwards which leaves quite sufficient room for a longitudinal cut in the lower uterine segment sufficiently large to permit the extraction of the child. On account of the great thinness of the uterine wall great care must be taken not to injure the child.

The ureter has never come to sight in this operation. The wound in the uterus bleeds scarcely at all. There is sometimes some difficulty in extracting the child and the forceps may have to be resorted to.

The placenta may be delivered by the Crede method or manually.

The suturing of the wound is not attended with much difficulty. The author sewed the uterine wall with continuous catgut, and then the fibrous tissue over it; he united it by means of a running suture so as to leave no space, and then the abdominal wound was closed without drainage. He prefers, if drainage is necessary, to

carry the drain out through the vagina in order to avoid any danger of subsequent hernia.

He gives brief history of two cases operated upon by this method with fortunate results for both mother and child.

He considers the extra peritoneal Cæsarean section indicated in those cases of contracted pelves, in which hebotomy is impossible on account of marked high grade contraction or on account of rigid narrow soft parts. With these circumstances excepted, he prefers hebotomy.

In eclampsia, placenta prævia, and indications belonging to this category in which Kronig and Sellheim suggest abdominal Cæsarean section, the author prefers delivery by means of vaginal hysterotomy.

He then discusses the nomenclature of the obstetric operations. Cæsarean section should be confined to those methods of delivery involving the parts above the pelvis. He objects to the term "vaginal Cæsarean section", preferring "vaginal hysterotomy."

Stephen Rebaudi: "Hyperemisis gravidarum und Adrenalintherapie." *Zent. f. Gyn.* No. 44, 1909.

The author reviews briefly the theories as to the causation of vomiting of pregnancy, stating that pernicious vomiting has only been met with by him in a proportion of one case in a thousand.

The usual division into the nerve and toxic theories are mentioned. According to either theory either nervous or tonic influences or both combined, act by causing irritation of the vomiting nerve centre and others related to it, in this way giving rise to antiperistaltic movements in the upper portion of the gastro-intestinal tract.

It is especially interesting that a close relationship exists between the functions of the genital apparatus and the vasomotor centre. The author then develops the theory of this relationship in detail, references being made to the association of hyperæmia of the nasal mucous membrane of pregnancy and menstruation in women.

The toxic product of ovaries thus developed from the cells of the corpus luteum, the various maternal poisons of fœtal or placental origin which are developed in the course of pregnancy, are all characterized by the distinct effect they produce upon the vasomotor centres of the cord. Upon this depend the special and pathological syndromes which characterize the various periods of the sexual life.

In the belief that the symptoms could be benefited by something that would regulate the action of the vasomotor centres and being impressed by the work of Freund in the employment of adrenalin in the course of vomiting of pregnancy, the author undertook its employment believing that it acts by regulating the vasomotor centres and that it has a tonic action on the neuro-muscular system.

A case is then given, in great detail, of apparently severe vomiting of pregnancy in which the author was called upon to empty the uterus on account of the gravity of the symptoms. Before doing so he received permission to employ adrenalin which was given in the form of Parke Davis' 1/1000 adrenalin solution, 10 drops being given morning and evening.

For the first three days the patient received absolutely nothing by the stomach, but 150 grm. of water with 20 drops of laudanum were administered per rectum.

The patient went to term after a rapid recovery and was delivered of a 3027 grm. child.

F. Weber: "Zur Anwendung der Blutleere der unteren Korperhalfe nach Momburg in der Geburtshilfe." *Zent. f. Gyn.* No. 41, 1909.

Momburg's suggestion that postpartum hæmorrhage can be checked by the application of a tightly applied ligature around the body at the level of the umbilicus, has attracted considerable attention on account of the simplicity and ease of its employment.

The author of the paper has employed this treatment in a series of cases in the University Frauen Klinik in Munich. He employed a rubber tube about the thickness of the thumb. This was wrapped twice around the body and pulled sufficiently tight to cause the disappearance of the femoral pulse in the lower limbs. It is of special importance if satisfactory results are to be obtained that the tube be applied sufficiently tight to cause the obliteration of the femoral pulse. The obliteration of the femoral pulse is the guide as to the degree of tightness with which the rubber tube should be applied in order to avoid bruising or over-compression of the abdominal organs. The ends of the tube may be either knotted or held by assistants. The tube may be left applied in place from 5 to 35 minutes.

The treatment was employed chiefly for atony of the uterus.

Out of 16 cases, in 5 of them hæmorrhage occurred with the placenta still adherent. Immediately following application of the rubber tubing the bleeding stopped in every case immediately, and the uterus became in a few minutes of a stony hardness and in the course

of the next quarter of an hour the placenta was discharged without any further bleeding, the tube still encircling the abdomen.

In these cases the Momburg tube seemed to bring about most satisfactory results.

Equally satisfactory results were obtained in 11 cases of atonic hæmorrhage from the uterus in which the condition first developed after the expulsion of the placenta. The tube was removed gradually. In every case the uterus remained well contracted, if not quite so hard as when the tube was in position. No hæmorrhage worthy of the name followed the removal of the tube.

The authors have also employed the tube in cases where operative procedure was necessary and where hæmorrhage was undesirable, with equally satisfactory results. The employment of the tube is recommended in cases of severe tear of the cervix or where it is necessary to do a vaginal Cæsarean section. The tube in these cases, may be placed around the body but not tightened until the hæmorrhage is manifest.

In 40 cases the authors have had perfectly satisfactory results. In but 3 cases did the application of the tube fail to check the hæmorrhage; two cases of atonic post partum hæmorrhage and a third case in which there was a manual removal of the placenta and repair of an extensively lacerated cervix.

Rielander has suggested that in these cases of failure the cause is to be found in incomplete emptying of the stomach or bowels.

The author suggests the possibility that in certain cases the aorta may not lie directly upon the vertebral column but rather to one side, in which case compression exerted by the tube would be incomplete.

In none of the authors' cases were there any accidents or injuries that could be attributed to the use of the tube. In a few of the cases the patients complained of some tenderness in the lower limbs which disappeared in a day or two.

F. Hitschmann and L. Adler. "The Formation of the Mucous Membrane of the Uterus of Woman at Puberty with special regard to Menstruation." *Monatsschrift für Geburtshulfe und Gynakologie*, Jan., 1908. Bd. XXVII, Heft 1.

(An Abstract)

This paper represents the most valuable contribution made to our knowledge of the uterine mucosa during the last quarter century. Not so much is it that the authors describe anything new, for they scarcely do this; but rather is it that they correctly interpret the old. They are the first to definitely thread together the various multiform

histological pictures which the uterine mucosa presents and to enunciate the fact of a periodic rotation therein. They are the first to reduce this order out of the former chaos, to deduce the law of a fixed cyclic periodicity throughout the life-time of the menstruating mucosa. This important deduction constitutes the main thesis of the present paper, and therein is embodied the authors' justification to originality. As they correctly observe, for many years, indeed since the discovery by Nylander of the epithelial cilia, our knowledge of the uterine mucosa has remained more or less stationary. Throughout this time our conception of the mucosa has been that of a fixed tissue which at stated intervals, in accordance with the menstrual habit of the individual, submitted itself to a hæmorrhagic discharge. It is true that certain histological changes habitually were found in this mucosa, such as the changes in the number and character of the glands themselves or alterations more or less pronounced in the proportion of glandular and interstitial tissues. But these changes were regarded commonly as pathological—the so-called different varieties of glandular or interstitial endometritis.

In the light of this recent work we now know that these changes are but physiological, that they represent solely the different phases of the menstrual cycle. We are told that the uterine mucosa, throughout menstrual life, is never a fixed definite tissue but is always undergoing rhythmic change; that each month, in its premenstrual phase, the mucosa provides for the reception of a fertilised ovum; and if fertilisation occur, the early decidua-like changes of the premenstrual phase become simply more accentuated toward the formation of a definite decidua, while if impregnation be missed, this escape is indicated by a sudden hæmorrhagic destruction of the upbuilded tissue. In such way, then, the present article describes the life-history of the menstruating mucosa, and the included illustrations, old and familiar as are their faces, amply corroborate this description.

In what follows I have simply epitomized the authors' text and have endeavoured, in so far as possible, to permit them to tell their own story in their own words.

In the opening of their paper the authors give a brief résumé of the previous literature on the subject of the mucous membrane of the uterus and especially of the microscopic alterations of the mucous membrane in menstruation. They point out that in almost all cases investigators regarded the non-menstruating and the menstruating mucous membrane apart from each other and did not assume any intimate connection between the one and the other. The mucous membrane of the uterus was invariably described as though, so far as changes of tissue were concerned, only the changes of menstruation

had to be considered, and as though it always remained the same between two menstruating periods. After quoting at some length the statements on the subject made by Henle, Ruge, Gebhard, Nagel, Waldeyer, and Von Ebner, they pass on to their own investigations. These embrace 58 cases; the material was taken by operation from the living subject and fixed in fresh condition, and in the majority of cases numerous different portions of the uterus were utilised for the investigation.

The authors establish the fact that according to the histological changes of the mucous membrane the following four phases are to be distinguished in the cycle of the transformation of the mucous membrane:

1. Postmenstrual period.
2. Interval.
3. Premenstrual period.
4. Menstruation.

Then they describe the characteristics of the mucous membrane in the separate stages, beginning with

I. The Premenstrual period.

The chief characteristics of this phase are as follows: The mucous membrane, which in the interval is still relatively low, swells on the 6th-7th day before menstruation to two or three times its size, and this swelling is responded to by the changes in the component parts, the glands, and the connective tissue. The glands enlarge, and crested, papillary protuberances rise into the interior. The glandular lumina grow wider and wider, and the mucous membrane thus acquires a mesh-like, spongy formation at its base, while at the surface the excretory ducts of the glands become flatter and farther removed from each other owing to the swelling out of the connective tissue and to the œdema. The cells of the connective tissue of the surface of the mucous membrane become richer in protoplasm, and the nucleus colours slightly. The vessels are dilated, and there occurs extravasation of serum and lymphocyte elements. We have therefore a separation of the mucous membrane into a compact and a spongy portion; the glands themselves are peculiarly enlarged and filled with secretion; the epithelium secretes; and the connective tissue at the surface is swollen out and becomes similar to that of the decidua. These four changes—which the authors regard as cardinal—appear simultaneously and make the premenstrual mucous membrane so characteristic that it cannot be mistaken by anyone who has once seen it. While they are not always developed to an equal extent, they are invariably present in premenstrual cases. Thus the whole premenstrual mucous membrane acquires a great similarity to the decidua.

The authors then describe in detail the changes in the glands, the epithelium and protoplasm. In connection with the question of secretion they think there can be no doubt that the epithelial cells which show abundance of plasma, as opposed to those which were completely filled by the nucleus, are occupied in the formation of secretion.

Among other points of special interest they draw attention to the fact that mitoses are entirely absent in the premenstrual phase, and that there is a radical difference between the production of mucus of the cervix and that of the body of the uterus. In the cervix the mucus can be found in the epithelium, and the epithelia also stain on the application of mucus-colouring media; secretion follows regularly and is not confined to any special period. The glands of the body, on the other hand, secrete only in the premenstrual period; mucus is not observable in the epithelium, and it is only in the glandular lumen that the secretion acquires the capacity of giving the familiar mucus reactions. The whole question of the secretion of the uterine glands has hitherto been little studied, and the fact that they form a mucus-like secretion, though only at definite periods (viz. premenstrually) is of great interest, all the more so as the authors were able to establish that the same process occurs in the case of the young decidua also.

Finally, in describing the changes in the connective tissue, the authors point out the importance of having established the premenstrual occurrence of such changes in the superficial layers, inasmuch as it explains the much-cited statement of Ruge that the decidua-cell is not characteristic for pregnancy, because it also occurs outside pregnancy.

II. Menstruation.

The approach of the menstruation may be recognised by the fully distended wide capillaries and the minute extravasations of blood round them. The extravasations of blood in the superficial layers, originally very small, increase more and more in volume until they finally meet. Thus microscopically we have a complete picture of menstruation even before a drop of blood has yet reached the cavum uteri.

In consequence of the succeeding hæmorrhage into the superficial layers the tissue is rent in many places. Together with the blood, lymphocytes and leucocytes make their way in great numbers into the tissue. Thus red and white blood-corpuscles may be seen between the connective tissue cells which have been loosened and disarranged, and the distinctive character of the premenstrual connective tissue cells of the compact portion is obliterated.

The glands, in the course of the phase of menstruation, undergo retrogressive change, which show the following characteristics: The formerly wide glands become narrow; the lumen disappears, and the one glandular wall appears to touch the other; the epithelium is short and poor in protoplasm, so that almost the whole cell is occupied by the nucleus, the course of the glands is straight and tense. Together with these narrow glands, however, and in direct neighbourhood with them, there also occur broad glands: these two glandular forms are different not only in shape but also in function and contents, inasmuch as the epithelium of the broad glands is engaged in secretion and the lumen is filled with secretion, while the narrow glands are without contents and the epithelium shows no suggestion of secretion.

The rapid alteration of form in the glands and the epithelium is very noticeable, and it is not easy to see how the epithelium is able to follow such a marked reduction in volume. No doubt there occurs shedding of the epithelia.

The mucous membrane becomes low towards the end of menstruation. The division into a compact and a spongy portion vanishes. As regards the much-disputed question of the loss of the epithelium the authors are inclined to keep separate the superficial desquamation and the loss of the epithelium in the glands. Contrary to the general view, their observations showed that in the majority of cases the mucous membrane was deprived of the superficial epithelium over wide areas; they also convinced themselves that the epithelium is lost even in the protected portions. Moreover there may occur loss of the whole stratum of the compact layer. If larger portions of the mucous membrane are shed at once, they may cause acute pain—membranous dysmenorrhœa. Opportunities for such sheddings are always afforded by the structure of the mucous membrane in menstruation, and another factor also has to be taken into account, viz. the contractions which are produced by the passage of the blood or on the clotting of the blood, etc. Such contractions may result in a detaching of the compact layer, and the more violent the contraction the more extensive may the resulting detachment be. If no contractions occur, the menstruation may pass over without any noteworthy losses of the surface of the mucous membrane taking place.

The loss of the epithelium by mechanical shedding is, however, not a constant one, and thus one is forced to the assumption that epithelium is lost in other ways as well, and that compensation is secured by the quite regular formation of mitoses in the postmenstrual period and in the interval.

III. Postmenstrual period.

In this phase the mucous membrane becomes very low; at the commencement remnants of the hæmorrhage are frequently found sub-epithelially, but they are gradually removed. It is noticeable that, in the case of a typical menstruation, blood-pigment very rarely occurs. Rapid regeneration of the surface epithelium takes place.

The type of the postmenstrual glands is exclusively collaborate; the epithelium is low, and the protoplasm scanty.

The further development of the mucous membrane now depends on the new formation of cells in the epithelium. This formation evidently commences either during the hæmorrhage or immediately after. The authors did not observe any mitoses during hæmorrhage, though Mandl reports such; but they noted abundant formation of new cells one day after menstruation. Such new formation of cells takes place during the whole of the postmenstrual period and also in the interval, ceasing at about the time when processes of secretion begin to make themselves observable in the cell-protoplasm, i.e., towards the close of the interval.

These active new formations of cells prove that epithelium must have been previously lost, and their extent indicates that the previous destruction must have been very considerable.

The authors then describe the microscopical conditions of the phase in detail.

IV. Interval.

The cell-regeneration continues during the first half of the interval but is not nearly so active as in the postmenstrual period. As it diminishes, important changes take place in the epithelium. The cells become higher and richer in protoplasm, and the glands follow the change of the epithelium. These changes are described in detail by the authors. Towards the end of the interval the œdematous infiltration of the tissues can be clearly seen, being most in evidence at the surface.

The transition to the premenstrual phase shows the following characteristics. The mucous membrane of the interval is rather higher than the postmenstrual one; the glands are, to begin with, only slightly sinuate, but later on become so much more markedly; and at the end of the interval the formation of secondary sinuses is demonstrable. The epithelium becomes higher and higher; at first it shows no secretory action, and it does not enter on the stage of formation of secretion till towards the end of the interval.

In summing up the results of their investigations the authors emphasise the fact that it was hitherto generally assumed that the

mucosa of the uterus remains the same between two menstruations. Indeed only the interval, and to some extent the postmenstrual period also, had hitherto been recognised; the whole cyclic change remained absolutely unknown. The conditions applicable to only one phase,—i.e. the longest—were defined as normal and were described by the standard authors on the subject as though they were quite fixed. Everything which did not fit in with the limits thus drawn was declared to be pathological; thus, for example, *endometritis glandularis* was postulated.

It was not only the premenstrual changes that were overlooked but the whole fundamental cyclic change of the mucous membrane, the regular transition of the one form of gland into the other, and the cause and significance of such changes all remained unknown. The authors have now shown that the mucous membrane of the uterus of woman at puberty is in a constant state of transformation from the cessation of one hæmorrhage to the cessation of the next. The cycle falls into various phases, in which the mucous membrane behaves so characteristically that its temporal relation to the menstruation can be accurately defined from the microscopic appearance presented. The secretory activity of the glands of the uterus is restricted to a definite phase—the premenstrual. All the elements of the mucous membrane participate in its cyclic movement.

It is thus clear that it is impossible to obtain successful results from a study either of the non-menstruating mucous membrane by itself or of menstruating uteri by themselves, though this is the course which has so frequently been followed by investigations even in recent times. The hæmorrhage has to be considered in its relation to the whole cycle; it merely signifies the last phase of the cyclic development of the mucosa of the uterus, the retrogressive metamorphosis of the mucous membrane which has become almost decidual in its character, the introduction to a new cycle—to the new preparation for the admittance of an impregnated ovule.

It it natural to assume that the most important changes take place before the commencement of hæmorrhage. The conditions of the blood-pressure are in agreement with this assumption. The blood-pressure rises premenstrually until it attains its greatest height immediately before menstruation, and then falls pretty suddenly with the commencement of the hæmorrhage; and with the sinking of the blood-pressure the mucous membrane also decreases.

This cyclic transformation of the mucosa of the uterus is of fundamental importance for our comprehension of the physiological processes, and it is of great diagnostic value, for it allows us to determine

the temporal relation of the mucosa to the menstruation from the microscopic conditions alone.

The premenstrual changes of the mucosa deserve special attention. They can only be estimated in their full significance when the young decidua is brought into comparison with them. We then recognise that we have before us premenstrually the beginning of a decidua-formation both morphologically and functionally; there only exist differences of grade between the two. If hæmorrhage does not occur and conception follows, the decidua is formed from the premenstrual mucous membrane merely by the further development of the latter.

In this resemblance of the premenstrual mucous membrane to a decidua lies also the significance of the cyclic transformation which renders such a development possible every month.

A comparison with what takes place in animals demonstrates the significance of what is functionally the most striking and tangible phenomenon in the premenstrual mucous membrane and in the decidua, viz. the formation of secretion by the glands of the body of the uterus. The authors, from some few investigations made on the uterus of the dog, came to the conclusion that there is a great resemblance between the premenstrual mucous in man and that of the dog in "heat," and they note the probability that the "heat" of mammals which have no regular secretion of blood is homologous to the menstruation of man. Thus, since it is generally admitted that "heat" signifies the preparation of the mucous membrane for the admittance of the ovum, they believe that we are justified in making the same assumption regarding the premenstrual metamorphosis of the mucous membrane. The impregnated ovule would accordingly establish itself in the mucous membrane of the uterus in the premenstrual phase, the impregnated ovule would accordingly be that of the first period missed. It must be imagined that the ovule, within a period which begins six or seven days before the commencement of the menstruation, reaches the cavity of the uterus and so comes to nidation. Since we are obliged to allow for a longer and hitherto undetermined period of time to account for the migration of the ovule through the canal of the Fallopian tube, the extravasation of the ovule from the follicle and the conception might perfectly well take place in the postmenstrual period or in the interval. The nidation, however, would occur in the premenstrual phase.

With regard to the question whether hæmorrhage takes place by rhexis or diapedesis, the authors express the opinion that probably both processes occur. They were unable to determine the cause of the hæmorrhage itself.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The fifth regular meeting of the Society was held Friday evening December 3rd, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASE: FRACTURE OF THE FEMUR.

A. R. Pennoyer, M.D.—I show this case to-night because it represents fairly well the class of cases of fracture of the femur which we will be with increasing frequency operating on in the future, i.e., cases which we cannot reduce by ordinary means or hold in position. The man is 35 years of age and was brought to the hospital under the service of Dr. Shepherd on the 9th of June last. He was unconscious and in a rather seriously injured condition. While working on a platform which was covered with old iron, old stoves, etc., it fell and he was thrown some 20 or 25 feet to the ground, falling among the débris, some of which fell on top of him. Examination revealed a fracture of the base of the skull through the anterior fossa and a compound communited fracture of the right leg, at or about the junction of the middle and lower third. He had a crush of the left hand and a high fracture of the left femur. He was unconscious for two or three days, then partially conscious for a while and for nearly two weeks was quite irrational. We treated the fracture in the right leg with the ordinary plaster with a window. He was very restless and it was difficult to keep the parts in position Repeated attempts at reducing the fracture of the femur were unavailing and after these failures we decided that it could not be done unless by the open method. I then operated, using the method of Lane, and fixed the limb after the operation in a splint, for something under three weeks, after which the splint was taken off and from that time on both active and passive movements and massage were given and on the 42nd day he left the hospital and is now able to work. He has a slight limp, but that is on account of the somewhat faulty result in the other leg which shows a little shortening. The X-ray plates submitted show nicely the high fracture of femur with very faulty position of fragments, and the second one shows how perfectly the fragments are held together and in what good alignment by the plating.

J. Alex. Hutchison, M.D.—I only wish to express my appreciation of the satisfactory treatment in this case. There can be hardly any doubt as to the treatment here that the open method was the proper method, and it is just in these difficult cases that the excellent results of this form of treatment are manifest.

G. E. Armstrong, M.D.—The report of this case opens a very interesting field for discussion. Hospital surgeons are naturally keenly alive to the many points that arise in the diagnosis, complications and treatment of fractures.

There are three men to-day with whose methods every operator should be intimately acquainted. These three men represent three distinct schools. (1) Professor Bardenhauer in Cologne, who has published a book on the treatment of fractures by extension, which is very valuable indeed. Although he has been called the bloodiest surgeon in Germany, his methods in the treatment of fractures are conservative and for the most part bloodless and are followed by a great many. He would practically treat all fractures with extension and manipulation. I have been three times at his clinic, which is a very large one. He has arrangements at the foot of each bed for the charts, history, etc., of each case and also a pocket for the different skiagraphic plates taken during the treatment. It is astonishing what brilliant results he gets by manipulation and extension. He is rather severe in his criticism of the open method, and certainly his results justify his contention.

(2) One then goes to the other extreme and visits Mr. Lane's clinic at Guy's. He practically plates all the fractures that come to his clinic. He is very emphatic in his view that the open method is the only method which should be employed in the treatment of fractures and his results cannot be bettered.

(3) There has come upon the stage, not just in recent years though in England but recently, the treatment of M. Lucas-Championnière, of the Hôtel Dieu of Paris. He holds views that seem to us rather extreme, that mobilization may be carried too far, and, in fact, he is not very particular about getting the fragments into very exact position; he is after functional results, and while I do not think his functional results are as good as Bardenhauer's or Mr. Lane's, yet they are certainly good. Now, any one engaged in the daily treatment of these fractures, when he visits these three clinics with such masters at the head of them, teaching these different views, gets a great deal of food for thought and reflection.

I have come to hold certain views, and one is that when I cannot, with all the assistance I have in the General Hospital, and that is abundant, reduce these fractures and get them into perfect alignment, it is better to resort to the open method if there are no contra indications. I have tried it again and again and even when the fracture is opened up under ether and exposed, even then it is often extremely difficult to get them in alignment, there may be a muscle between the fragments, or a fragment may be so displaced as to prevent reduction. The other day after opening up one of these difficult cases it was only when I put

Lane's big tongs on that I could bring the bones into perfect position. I have the most profound sympathy for anyone who has an imperfect result in a fracture; it is a field in which there are most likely to arise strained relations between the doctor and the patient, and I do not know of any position where he is more likely to fall down innocently than in such cases. I treat fractures difficult to reduce more and more by the open method, but there are a great many who do not. No less an authority than Professor Eiselsburg has recently published a series of cases that demonstrate that perfect anatomical replacement is not always necessary to obtain a good functional result.

Now, the question arises if the functional result is good how far we are justified in exposing the patient to any increased risk by the open method. I always teach students that no man without a hospital, without a technique that he can trust day after day, is justified in treating ordinary fractures by the open method. On the other hand, a hospital man with a technique that he knows he can trust, and modern facilities at hand, can often get more satisfactory results by the open method.

In the matter of Professor Lucas-Championnière of the Hôtel Dieu, those of us who were students thirty years ago remember how Frank Hamilton insisted upon perfect immobilization. He went so far as to claim that delayed union in many fractures was due to movement in the bed and he would sling these fractures in a crib so that the movement of the patient in the bed would give the least possibility of motion at the line of fracture. I think these fractures should always be immobilized for a time, but a little irritation at the line of fracture, after fixation is fairly well established, is a stimulation to throw out the callus and to change that callus into good strong bone. In addition to the massage the more one can apply the ambulatory method the better, and in those in which you cannot, I have hastened union in many cases by the application of a Bier's bandage or passive hyperæmia. I do not think the last word has been said by any means on the treatment of fractures, but certainly the question of the open and the closed method is an interesting one.

A. R. Pennoyer, M.D.—I was interested in Dr. Armstrong's remarks especially the point which he makes with regard to leaving splints on too long. In my clinic we are leaving off the splints very much earlier than previously, because I think fixation takes place in a couple of weeks after this, care is all that is necessary for the progress of the case.

LIVING CASE: THE VALUE OF MESMERISM IN DIAGNOSIS, WITH DEMONSTRATION.

D. A. Shirris, M.D.—This patient came from Sherbrooke, where some 14 or 15 weeks previously he had fallen a distance of some 26 feet,

injuring his back. He was supposed to have a fracture of the spine; he had a motor paralysis of both lower extremities and a sensory paralysis of both upper extremities; there was retention of urine and a marked area of hyperæsthesia in relation to the area of the spinal column supposed to be injured and all the typical symptoms of compression of the spinal cord. Besides that there was a distinct Tic, a peculiar jerking of his head—this had been of four weeks duration, coming on some time after the accident.

On going into the history of the case I learned that four years previously he had been under the care of Sir William Gowers, in London, for four months. At that time a diagnosis was made of an intracranial growth. There was nystagmus, headache, vomiting, some trouble in vision, a marked staggering gait, tinnitis, and other symptoms pointing to a cerebral neoplasm. His head was shaved and he was prepared for operation, and I believe Sir Victor Horsley examined him, but operation was deferred and he was put on heroic doses of the iodide of potassium and the symptoms slowly disappeared in about eight months. About a year ago he came to this country as a carpenter and was employed in the vicinity of Sherbrooke. He did not seem to have any difficulty in climbing to great heights and would work on the top of a building without any symptoms of his old trouble. His fall was the result of the breaking of a plank upon which he was standing.

The patient mentioned to me that while in the London Hospital he had seen Dr. Russell and I therefore sent for him to see the patient with me, but he could not recall the case.

After due consideration I came to the conclusion that we were dealing with a case of cerebral inhibition. There was no doubt he had had the injury with a considerable amount of bruising, which had produced a traumatic neurosis, with the symptoms just mentioned. I advised Dr. Hutchison, under whose care the patient was admitted, that nothing further should be done until we could observe the patient more closely. On Tuesday I saw him, and again on Sunday and I was more confirmed in my opinion. There was a distinct deformity in the spinal column in the situation of this hyperæsthetic area, but the X-Ray showed no displacement or other abnormality. On Friday, after the clinic, I had the patient brought down to the outdoor department and he was put into the hypnotic state and made to walk. On Tuesday of last week I thought it might be an interesting case to demonstrate to the fourth years students, for as a rule the average student or young graduate has a very imperfect idea of what hysteria is or mental inhibition. The patient was brought down to the clinic and the case was discussed before the class. I referred to cases where patients had been bedridden for years

and yet on some great shock, fire, etc., they have got up and walked about. One can easily recall dreams where the faces of those we have not seen for years have come out perfectly distinctly, which in our waking state we could not recall, and the same with voices. I remember a case of Dr. Stewart's; he gave the girl a sum to do, but found that she could not do it, and yet under hypnosis given the same sum she did it perfectly. What is this inhibition? We all know that it is comparatively easy to walk across a plank say six inches broad and 25 feet long over a quiet brook, but attempt this again when the brook is swollen with recent floods and rushing madly along, and notice how hesitatingly you will cross. There is here the element of fear.

This afternoon I made the patient walk up and down the ward under hypnosis and with his consent he will go to sleep again and walk up and down this room. I may say that after he was put to sleep the first time the Tic disappeared though it reappears for a few minutes after each sleep.

C. K. Russel, M.D.—This case has been of great interest to me. I saw him at the end of last week and he certainly has improved very much; especially as regards a very marked spastic tic from which he was then suffering. At that time as Dr. Shirres has said, he could not walk at all. I do not remember seeing him in Queen's Square Hospital, though he remembers me, but from what he tells me of his treatment there, which was electricity, I can be quite sure that he was diagnosed as a functional condition, and as he said, went out cured. I have not much personal experience with hypnotism or mesmerism. I saw a good deal of it on the other side, and my experience did not encourage me to take it up personally very much. It is not so much the influence one has over the patient in making them do anything that was wrong, but it was the influence on their character in general. Some cases that I followed at Zurich were really in a worse state mentally than their previous physical condition; in fact it seemed to me that in driving out the devil that possessed him seven others came to take his place, and I think that is one thing which has deterred me from taking the matter up seriously. I have written to Queen's Square Hospital as I think it would be interesting to get the notes of this patient's case while there. I think the treatment practised there is just as efficacious, and perhaps less dangerous, than hypnotism, that is to simply overcome his cerebral inhibition by some external stimulus such as a strong current of electricity administered with the wire brush and associated with proper suggestions. This I think has some educational value on the patient's mind and tends to keep him from becoming affected again, for some time at least.

J. Alex. Hutchison, M.D.—With regard to the patient I might

say that his presence in Montreal is due to the fact of there being no X-Ray apparatus in Sherbrooke. Those in charge of him there felt that radiographs should be taken and I was asked to arrange for his admission to the hospital practically with that object in view . Had there been an X-Ray in Sherbrooke and perhaps not a Dr. Shirres, this man might have been in the same condition and from a surgical point of view it might have been a very puzzling case. Also this case would have been a very serious one for a railway company. The situation in Sherbrooke is not unlike a great many other towns of similar population, with many competent men, but without the presence of an experienced expert neurologist, and such cases continue to deceive able and experienced practitioners. When he was admitted to my service the man showed a very distinct appearance of fear on his face and looked fearfully at everything, and this was particularly well marked if two or three persons came to the bedside, he became so confused he could not speak a word. With reference to the retention, I cathererized him myself, and taking my clue from Dr. Shirres's diagnosis I told him that it would be the last time he would require the catheter, and I think, with one exception, it was. He has been very easily open to suggestion and we have made a practice of complimenting him on his general improvement and telling him he was getting better and his improvement has been marked from day to day. We make him walk every day, which he is able to do with very slight support.

D. A. Shirres, M.D.—I think Dr. Russel is right with the majority of medical men in what he says as regards the ill effects of hypnosis, but I think the opinion has been wrongly held, as I know from men who have practised it for years. We have tried everything else, and we are getting perfect results and none of these cases have shown any character deterioration, nor have I found any bad effects or mental weakness in my own cases. I have tried, as Dr. Russel has tried, sometimes with success, giving the faradic brush, giving different forms of stimulation, but in the majority of picked cases one gets better results with hypnosis. The only thing I do not like about it is that it savours of the quack and is not recognised yet sufficiently by our colleagues. I am absolutely certain that in this case the patient will be leaving the hospital in two days and able to walk.

THE SPIROCHAETE AND ITS DIAGNOSTIC SIGNIFICANCE.

R. P. Campbell, M.D.—Read the paper of the evening.

C. B. Keenan, M.D.—I must say that as a means of finding these small micro-organisms, I have found the India ink method of much value. It is simple and takes but a short time and it is very easy to

find the flat, ribbon-like spirochætes when they are present. I think you will find yourself well repaid by trying this method and it is almost as accurate as the dark stage, although one must admit that in the use of the India ink method you have no chance of seeing the living spirochæte move, and that is of course, a strong point in favour of the dark stage. Yet you will find the results by both methods excellent.

FIVE CASES OF TUBERCULOSIS OF THE EYE.

R. A. Kerry, M.D. read the report of these cases and the result of treatment by the injection of iodoform.

J. W. Stirling, M.D.—Dr. Kerry's contribution to the treatment of cases of tuberculosis of the eye is interesting. I have not had much experience in the use of iodoform. It is a comparatively limited number of years since the diagnosis of tuberculosis in the eye has attained any prominence, but during the two past years its presence has been very frequently detected, in fact, 50 per cent of the cases of uvetis and scleritis have been traced to it. The treatment is a matter of import. In some of the cases which I have had we have used the injections of the bacillary emulsion or tuberculin, the treatment spreading over a more or less lengthy period with a result that possibly might be claimed as good in that the disease was apparently stopped for the time being. One point about these tubercular lesions is that they frequently tend to recur, in one of my own cases after two years. In the most of my cases I have limited myself to the installation of atropine and the administration of the syrup of the iodide of iron, with the result that after varying periods they came to rest very much in the same manner as Dr. Kerry reports under the treatment by iodoform. The question always arises in these cases as to the permanency of the cure and if the iodoform gives a permanent cure so much the better. Under general tonic treatment we get a certain period of rest, but I am always watching for recurrences. The reaction following injections is against its general use in eye cases. In lung cases, the slight local reaction following the injection of tuberculin is of but little import, whereas a local reaction in the eye may cause further marked deterioration of vision.

Dr. Gurd:—I would like to confirm what Dr. Kerry has said with regard to the case which came under my care, the eye was given the iodoform treatment and she is perfectly well now.

Geo. H. Matthewson, M.D.—At the Massachusetts Eye and Ear Infirmary in Boston they take it for granted that nearly all their cases of scleritis and a great many of their corneal conditions are tubercular. The therapeutic measure they employ there is the injection of tuberculin, giving small doses so that there will be no reaction in the eye. I have seen some excellent results there under this treatment.

S. H. McKee, M.D.—I would like to congratulate Dr. Kerry upon his series of cases. I had no idea that tuberculosis of the eye was as common here as it seems to be. In many cases the diagnosis is not an easy matter, and one would have liked to have heard from Dr. Kerry, his means of diagnosis in these cases. The method most in vogue is the sub-cutaneous injection of Koch's tuberculin. With this method, as Axenfeld points out, there are two points to consider, first, will a small lesion in the eye, if it is tubercular, give you a reaction, and again, if you get a reaction, is it due to this tubercular lesion of the eye? I do not think that either of these points can be decided upon until there has been considerably more work done in this comparatively new field. The diagnosis in many cases depends upon the histiological picture. Where the uveal tract is involved, and where you have the eye reacting to some irritant, it is necessary if you are to diagnose tuberculosis, to have a definite tubercular picture, that is, a definite tubercle consisting of epitheloid cells with necrosis, and perhaps bacilli. Certainly, necrosis is necessary. I have lately seen in the literature a case of tuberculous iridocylitis reported where it is stated the diagnosis of tuberculosis was made from the histological examination, and where in the description of the histological picture, it says distinctly there was no necrosis seen. I only mention this to show how error may creep in, and how easy it is to say that the case is tuberculous because of the presence of giant cells. I may say that I have had no experience in treating tuberculosis of the eye. The method which seems at the present time to be giving most satisfaction in the European clinics is that of von Hippel. He uses the injection of new tuberculin in very small doses, 1/500 of a mg. This is given every second day and increased at each injection, but always stopping before 1/50 of a mg is given, and never increasing the dose if there is any severe reaction.

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DEMONSTRATION OF THE TRACHOMA BODIES.

BY

S. HANFORD MCKEE, B.A., M.D.

From time immemorial, trachoma has existed in Europe as an endemic disease (Fuchs). When the armies came in contact with each other or with the civil population, the disease occurred in epidemics and became widely disseminated. Its contagiousness, placed beyond doubt by the positive inoculations in blind eyes, has been well understood for years, but the cause of this dread disease has, up to the present, remained a mystery, not from want of searching, because during the last fifteen years research in this department of ophthalmology has been most active.

From time to time, numerous micro-organisms have been put forward as the cause of trachoma, without definite proof, until workers in this subject had become convinced that without newer methods, the cause would not be found.

It remained for Halberstedter and Prowazek to make the first great advance in our knowledge of trachoma. These men while working in Java on syphilis found in the epithelial cells in cases of trachoma inclusions which were constantly present. In many of the cells these granules coalesced and formed bodies which covered the nucleus like a cap. Prowazek believed them parasitic and called them chlamydozoa. They inoculated orang-outangs and presumed contagiousness from the appearance of follicles in the epithelium. This report was published in 1907, and since that time their findings have been corroborated by several workers. Sceptics were not wanting, however, and many said that they had seen similar bodies in other forms of conjunctivitis. It was difficult at first, without good photographs, to know just what Halberstedter and Prowazek described as the trachoma bodies, especially as they noted dark blue spots close to the nucleus, the plastin clots of Prowazek, who believed they represented the reaction of the cell to the intruding microbe. It is possible that these plastin clots have been confused with the real trachoma bodies.

Read before the Montreal Medico-Chirurgical Society, February 4th.

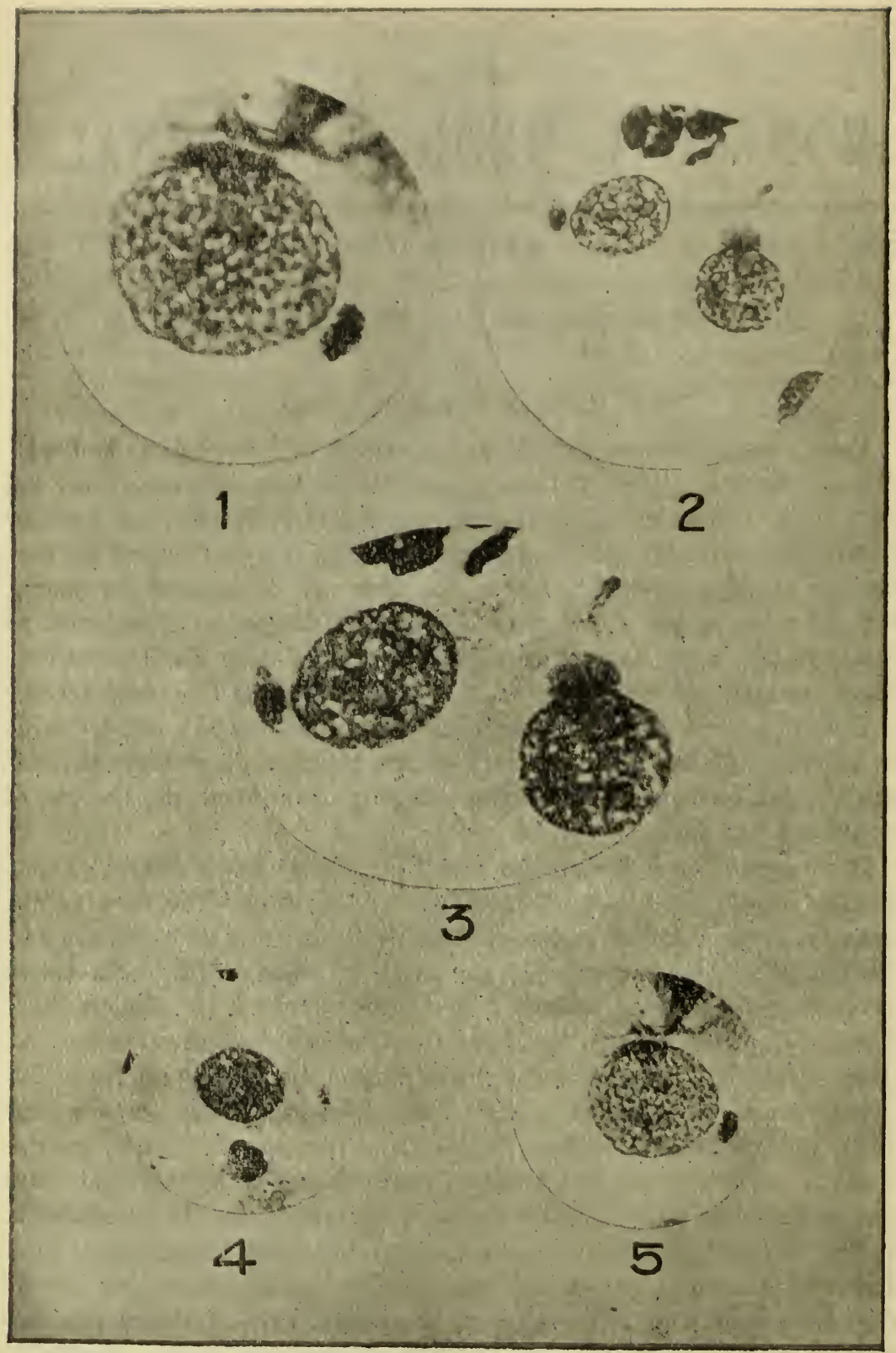

Fig. 1. Smear from case 3, Giemsa stain, magnification 2,000 diameters. Two bodies are seen, one attached to the nucleus of the cell, while the other has a definite space between it and the cell.

Fig. 2. Smear from case 4, Giemsa stain, magnification 1,000 diameters. Two bodies are seen associated with two nuclei.

Fig. 3. This is the same as Fig. 2, except the magnification, which is 2,000 diameters.

Fig. 4. Smear from case 5, Giemsa stain, magnification 1,000 diameters. The trachoma body here is very small, and situated some distance from the nucleus of the cell.

Fig. 5 Same as Fig 1, except magnification, which is 1,000 diameters.

Fuchs, from the work of his assistant who has found these bodies in large numbers of fresh and old cases, believes their presence of value from a diagnostic point of view.

Others, as Addario, believed them artefacts composed of sedimented staining matter mixed with degenerated cells in the course of histiological preparation. Lodato, who claimed to have seen them in Spring Catarrh, was of similar opinion, but as Clausen at the last International Congress stated, Addario and Lodato had not submitted any microscopic proof in support of their contentions. The bodies which they described were not identical with trachoma corpuscles, had been seen by him in various forms of conjunctivitis, and could be distinguished readily, after some practice, from the Prowazek bodies.

We have been naturally greatly interested in the subject in Montreal, because we sometimes see fairly active trachoma here. While waiting for a suitable case to present itself, and to master the technique, about fifty cases of other conjunctival inflammations were examined. In none of these were we able to find the trachoma bodies. About three weeks ago an adult male, a Roumanian who had been in Canada one year, presented himself at the Outdoor-Clinics of the Montreal General Hospital with acute mild trachoma. The conjunctiva was scraped with a dull scalpel and the material smeared well over glass slides. These were dried in the air, fixed in absolute alcohol for ten minutes, and stained for twenty minutes with the new Giemsa stain, to one drop of which fifteen of distilled water were added. The results were very satisfactory. In every slide prepared during a period of eight days, the so-called trachoma bodies of Prowazek were found. They are round bodies, smaller than cocci, and within the protoplasm of the epithelial cells. They are sometimes grouped in masses which as a rule are close to the nucleus of the cell. Naturally these masses vary considerably in size. Sometimes these bodies are seen surrounded by a halo or mantle. This form is supposed to represent a stage in the development of these bodies. A piece of the palpebral conjunctiva was taken and fixed in Zenker's solution. Some very beautiful slides stained with eosin and methylene blue by Dr. Wolbach were obtained. Numerous trachoma bodies were found within the epithelial cells. All these points are well illustrated by the specimens under the microscopes. Regarding the variation in size, a point which may be of interest is that, in the slides prepared on the seventh day, the bodies were much larger than those in the slides prepared during the last few days, also in two of the positive cases which we have had, the halo forms were found in the initial slides. Previous to examining these cases, I had a case of trachoma where I thought the bodies should be easily demonstrated, but from faulty

methods, or some other reason, they were not seen. So that in the six cases of active trachoma examined, we have found the Prowazek bodies in five. Whether these inclusions are parasitic or not, or whether the causative agent of trachoma has not yet been determined; but their specific nature is now fairly well established and this means a big step forward. Diagnosis is made easy and certain. We see a number of cases at the Montreal General Hospital, where clinically a diagnosis would be difficult, but by excluding diplobacillary conjunctivitis by means of bacteriological methods, the task is greatly lessened. Now with the aid of the trachoma bodies, diagnosis will be put on a very definite basis. With that, the disease will be defined with exactness, and the old question of follicular conjunctivitis and trachoma settled.

For the accompanying micro-photographs I am indebted to Dr. S. B. Wolbach.

TABES DORSALIS AND THE "ERSATZ-THEORIE."

Illustrated by Four Cases from the Neurological Clinic of the Royal Victoria Hospital, Montreal.

BY

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Edinger's original paper on what he called the "Ersatz-theorie" of Tabes Dorsalis, was published in 1894-5, in a German journal to which few of us here have access; and the excellent paper on the same subject by his assistant Holmes, published in the Dublin Journal of Medical Science, in 1901, has also to a large extent escaped notice. Feeling, therefore, that this explanation of the ætiology of Tabes deserves your attention, I have pleasure in presenting these cases, which illustrate the truth of the theory so well.

Case I—S. C., male, aged 35, by occupation *chef* on a dining car, came to the out-door Neurological clinic on August 3rd, 1908, complaining of failing vision, sudden sharp shooting pains in the legs and back, and some difficulty in walking in the dark

His history was as follows:—He contracted Lues 12 years ago and was treated for 5 months by hypodermic injections of mercury, Fourteen months ago, i.e., before admission to the clinic, he first noticed failure of vision which progressed, till on admission, he could read only the heading of the newspapers with the left eye, and he was blind in the right eye. For four months before admission he had noticed some impaired sensibility of the bladder, being able to go for 24 hours without desire to empty it; he has now some difficulty in starting

the stream. There has been some difficulty in walking in the dark, and there have been definite lightning pains.

On Examination:—There is bilateral optic atrophy, causing blindness in the right eye and very defective vision in the left, he can count fingers at about two yards; the pupils are inactive to light but react to accommodation. There is a scarcely perceptible ataxia of the lower extremities evidenced in touching the heel to the opposite knee, and a slight impairment of the sense of position of the muscles, which is shown by his not knowing in which direction one moves his toes if his eyes are closed when one is doing it. The knee and ankle jerks are absent. Romberg's sign is present. This patient's condition has not altered perceptibly since his first admission, save that for a time, at the end of last winter, it was noticed that there was an increase in the loss of the sense of position in the lower extremities. This was accounted for by the fact that he used to walk into the clinic from one of the suburbs every week or two, and the walking was very heavy.

It is evidently a typical case of Tabes with optic atrophy.

Now, on going into his history more carefully, it is found that while employed on the dining car he was in the habit of reading for two hours every afternoon and again from 9 to 12 at night, usually lying down in his bunk, by the light of a coal oil lamp, while the train was running along. The strain on his eyesight can be imagined. It is interesting to note that impairment of vision was for a long time his only complaint, and especially that since he has given up all occupation that would cause any strain on his sight, this has not become any worse.

Case II—G. P., male, aged 33, by occupation a tailor, came to the clinic on October 18th, 1909, complaining of disturbance of vision, weakness in the arms and "electric shocks" in the arms and legs, occasional vomiting. He gives a history of a primary luetic infection eleven years ago, for which he was treated at the Montreal General Hospital for four months by inunctions of mercury. His present trouble began three years ago with disturbance of vision, and the eyes became crooked as they are at present; about the same time he began to suffer from pins and needles sensation in the arms, and he had increasing difficulty in carrying on his occupation of sewing. Some time later he developed these sensations in the legs also. He states that he empties his bladder about once a day as a rule.

On Examination:—The fundi are normal, there is marked bilateral ptosis with compensatory contraction of the occipito-frontalis in the endeavour to hold up the eyelids, there is an outward deviation of the eyes due to a weakness of both internal recti; he can fix either eye on an object to the nasal side, but there is marked secondary outward devi-

ation of the other eye on the attempt. There is a slight impairment of upward movement of the right eye.

The right pupil is larger than the left, and neither react either to light or to accommodation. There is very marked loss of tone in the upper extremities but no actual loss of power, the use of the arms, however, is interfered with by an extreme ataxia, especially on the right side (it might here be noted that he is a right handed man); the loss of tone in the lower extremities is scarcely perceptible, and as you see there is little or no ataxia in walking. There is an extreme loss of the sense of position in the upper extremities, if with his eyes closed he is told to touch one thumb with the finger of the other hand, he can only do so by finding first the elbow and following up the limb from that. There is delayed sensibility to pain in the lower extremities, and to a lesser degree in the upper. The knee and ankle jerks are absent.

On inquiring into this man's occupation we find it was to sit and sew all day, threading his own needle. We have, then, immediately the explanation of the location of the disease in this case. "Function creates the symptom complex." We have then here, not the usual and simple loss of the reaction of the pupils to light, but owing to the patient's occupation necessitating the frequent use of the reflex of accommodation in order to thread his needle, the neurones governing this movement have also become affected, and we have the loss of reaction of the pupil to accommodation, and paresis of the internal recti. In the same way the reason for the affection of the arms is obvious, and the escape of the lower extremities.

Case III—A. C., male, aged 44 years, by occupation a cigar roller, came to the clinic on July 22nd, 1909, complaining of blurred vision for the last two years, and some difficulty in walking in the dark for six months past; he has had shooting pains in the legs for the last 13 years, and girdle sensation. He frequently passes a day without the desire for micturition and has difficulty in starting the stream.

On Examination:—There is bilateral partial optic atrophy, the pupils have lost the reaction to light, but react to accommodation. There is a slight but definite ataxia in the upper extremities, especially marked in the right arm, and a very definite loss of tone in the muscles; the ataxia is also present but to a less extent in the lower extremities. The knee and ankle jerks are absent. Romberg's sign is present.

On looking into his history more carefully, we find that previous to two years ago his place at work was in a very dark part of the room, and he says it was a great strain on his eyes to see well enough to finish off the ends of the cigars; since that time he has his seat in a better lighted part of the room near the window.

Case IV.—A. S., male, aged 36, a shoemaker, admitted to the hospital under Dr. Martin, December 30, 1909, complaining of inability to walk, and lightning pains.

For three or four years the patient has been in the habit of congratulating himself on his ability to hold his water, even making it a matter of boasting that he could go from the time he got up until he went to bed again, without emptying his bladder. In April, 1908, after selling his place of business, he started out with what was left to him in a bullock waggon, and walked for eight days and nights across country, in cold and rainy weather, becoming terribly fatigued and was "snow blind" for weeks after this; from that time he has been unable to walk without support, not being able to control the movements of the legs; he cannot attempt to walk in the dark. In May, 1908, he found that he could not urinate when he wanted to, and he began to have incontinence. He has had the lightning pains for the past seven months. There is a history of a chancroid 10 years ago, but there were no secondary symptons.

On Examination:—The fundi are pale and atrophic looking, there is the typical Argyl-Robertson pupil, and internal strabismus due to a paresis of the left external rectus. There is marked loss of tone and extreme ataxia of the lower extremities, so much so, that the patient cannot walk; he has impairment of sensibility over the feet and about the mammary regions. The knee and ankle jerks are absent.

Following the other cases, the explanation of this one is obvious. Of course the snow blindness was simply a conjunctivitis, but the glare of the snow on the eyes was quite sufficient to cause a partial optic atrophy,[1] and the journey, exposed as he was to wet, cold and extreme fatigue, sufficient to produce exhaustion and determine the symptoms in the lower limbs.

We know that there are certain changes which take place in the functioning nerve cell; these may be demonstrated under the microscope; they consist in a breaking up of the Nissl bodies, and further a swelling of the ganglion cell with an emigration of the nucleus towards the periphery, and finally, if the hyperactivity of the cell be continued, and extrusion of the nucleus and the death of the cell. If, however, the activity of the cell cease before the extrusion of the nucleus we know that the cell will recover, under normal conditions, its original appearance.

Now, in Tabes, "function determines the symptom complex." There is, in this disease, the presence of a toxine, usually syphilitic, which renders the nutritional papulum served to the nerve cell not sufficient

[1] Edinger reports a similar case of a naval officer who developed optic atrophy from being exposed to the glare of the sun off the water while superintending target practice at sea.

for its needs. This power of recuperation of the cell must be limited or even in abeyance. There results a loss of compensation as it were, with a gradual and progressive impairment of vitality of the neurones in question, and finally their death, their place being taken by connective tissue. Which are these neurones in question? Undoubtedly the sensory neurones function more than any others. They are always active. We are continually getting information as to the position of our limbs in space, and the amount of contraction in an acting muscle, and it is the neurones which subserve this function that are first affected, causing the ataxia and the loss of tone. Usually it is first in the lower extremities, but that is simply because most people use their legs more than their arms or other parts.

In the same way the Argyl-Robertson pupil is accounted for, as undoubtedly our pupils react much more frequently to light than to accommodation.

The same theory accounts for the involvement of the bladder so frequently seen in Tabes,—first an impairment of sensation owing to the exhaustion of the sensory neurones supplying the bladder, and a consequent lack of sensitiveness so that the patient can hold his water for 12-24 hours without a desire to pass it, and this causes a loss of tone in the bladder, and the complaint that he must wait a minute before he can start the stream. It accounts also for men being so much more commonly affected than women, for, as a rule, they must lead so much more strenuous a life. Mendel, in Berlin, showed this very well. In his private clinic among the upper classes, the proportion of tabetics in men and women was 25 to 1, while in his policlinic in the slums of the city, where the women lived equally hard lives with the men, the proportion was 6 to 2.

It accounts for why when optic atrophy comes on ataxia of the limbs does not develop, or if already present it improves, because when a man is blind he cannot exert himself overmuch, cannot over fatigue himself.

It accounts for why the natives of the Southern Continents are so immune to Tabes, their climate and natural lack of energy preclude over fatigue. It does not account for the lightning pains or the various visceral crises, but as Gowers has suggested, these are probably due to some chemical irritation of the nerves produced by the degenerative changes.

It may be asked why are not the motor neurones affected, why do we not get muscular atrophy, and so on. If you will remember, the anterior horn cell is naturally adapted to respond to two sets of stimuli; first those from the cerebrum by way of the upper motor neurone, and second, those reflex stimuli from the sensory cells at the same level

in the cord. While the cerebrum is at rest during sleep, or when we are not moving, the anterior horn cells have an opportunity of resting and recuperating, and when the stimuli from the spinal sensory cells are cut off owing to their degeneration in this disease, the anterior horn cells have still further opportunity for resting.

This theory also accounts for the exacerbation of symptoms after any acute infection, accident or shock, the additional toxines in the system impairing still further the recuperative power of the cells. It accounts for the number of cases of tabes that develop in soldiers newly sent on active service. The 4th case referred to is an example of this. It accounts, also, for those few cases where there is even on careful and exacting investigation no evidence of primary syphilitic infection, some other slowly acting toxine may be present impairing the recuperation of the cells.

Will this theory account for the pathological picture we find in Tabes? We think it will. There is the degeneration and sclerosis of the posterior columns, usually most marked in the lumbar region, but in cases of cervical Tabes, such as the three first cases shown to-night, the sclerosis is most marked in the cervical region. At the same time there are relatively few changes to be found in the posterior ganglia from which these degenerated axis cylinders arise. Just as in a plant that has not had sufficient nourishment it is the leaves and branches which die first, the roots still retaining their vitality, so it is with the nerve cell when its nutrient pabulum is insufficient, the parts farthest away from the nutritional centre are the first to die and their place is taken by connective tissue, giving rise to the sclerosis of the posterior columns of the cord. None of the other theories of Tabes based on the pathological picture of the disease will account for the clinical findings in so satisfactory a manner, they do not account for the preponderance of male tabetics over women, nor for the improvement of the ataxia when optic atrophy develops, nor for the development of the optic atrophy itself, nor for the Argyl-Robertson pupil, nor do they account for the cervical region being affected in one case and the lumbar region in another. Again, if we accept this theory as the true one, it immediately puts into our hands most obvious and definite indications for treatment at least prophylactic, and the results of this treatment bear out the truth of this theory. This is especially seen in the re-educational treatment of the ataxia. The patient must avoid fatigue of any part.

A CRITICAL ESTIMATE OF THE MEDICAL EDUCATION OF THE DAY WITH SUGGESTIONS FOR THE RE-ORGANIZATION OF THE PHYSIOLOGICAL DEPARTMENT OF McGILL UNIVERSITY.

BY

WESLEY MILLS, M.A., M.D., Professor of Physiology.

As the suggestions I have to offer in regard to the reorganization of the Physiological Department rest on my present views as to Medical Education, I will ask your patient attention to these views expressed somewhat briefly. They might be summed up in two statements:

1. Our present methods of education or dealing with students are a great improvement in many respects on those in existence when even the youngest member of the Faculty was an undergraduate.

2. The methods we now employ, and those we omit to use, cause a condition of mind in students which is highly unsatisfactory. This probably applies more fully during the first three years of the course than during the last year or two.

The improvement in our methods consists in the following:

1. The greater opportunities students have to observe by demonstrations, etc.

2. The improvement from laboratory work, and clinical observations carried out by the students themselves.

3. The time was when students at McGill could boast that they had passed examinations in certain subjects—and not in one but several—without having opened a text-book.

That is scarcely possible now though some students come near to it, anatomy always being an exception. Students once did practically no reading except of the notes of lectures. Now they do some—at least a little—and a few students, a good deal.

A student is not now supplied with information in purely abstract form. His demonstrations and laboratory work help, at least to some extent, in the comprehension of what he hears and reads. We have made an advance and we are likely in a condition not either much worse or much better than, on the whole, other first-class Medical Schools; and though we might in some directions, imitate these institutions, I maintain that we are in a transition stage as regards medical education, and far from what might be, and should be, at the present time.

We give information in better form than ever before; but we ourselves supply too much and require the student to seek too little for himself; and this imparting of information, with even the best *exposition,* is not to any considerable extent educative.

In education there are two broad factors: (1) The person or subject and (2) the environment. There must be a reaction between the subject and the environment.

All that influences the subject falls under "Environment," and in this the so-called means, and especially the teacher, used only to produce one result in the student—development in all directions.

Unless the distinction is clearly made between giving information, and educating or developing, we shall continue to make serious mistakes.

He is the best teacher who stimulates the student to make the most out of himself, while the pair is associated, and who leads him to continue his development, after they separate. It follows that a teacher may impart excellent information and even be an expert in the art of exposition, yet fail according to the standard indicated above: yet ever since I have known medical teachers they have been judged almost wholly by this narrow and false standard. Judged by the higher standard of development and power to go on developing, is the medical education of to-day anywhere a complete success?

Have our students a desire for knowledge for its own sake? Have they the power to observe independently and to draw conclusions? Have they any originality or even individuality? Can they get knowledge for themselves—real knowledge to be attained only by the use of certain means? Do they ever desire to acquire knowledge in this way?

Speaking more especially for the earlier three years and for the great majority of the students, I must, after a long period of observation, answer these questions, on the whole, in the negative.

I therefore conclude that our methods are not a genuine success, and that the sooner this is realized the better. Why are they a failure? In a word, because the methods are not adapted to the subjects (the students).

What course do we now follow? We subject all students independently of their general capacity, special aptitudes, or the reverse, to substantially the same methods of treatment. We do not believe in shotgun prescriptions, and the one prescription for everyone who has a cough, but in our medical education this is the plan followed. So many lectures for all men and the same lectures; so many hours of laboratory work and the same work, with no special exercises for special men or groups of men; no special helps for the weak; no special problems for the strong to solve. Consider, too, that we take men who who have been quite unused to scientific observation and who have known little else than learning, so-called, from books, and we give them all alike a great deal to observe, and we require or give little or no attention to the use of what alone they previously understood

to some extent, the use of textbooks and other reading matter. We encourage but little, if at all, the spirit of finding real knowledge; or otherwise put, we encourage little the spirit of investigation. How is it possible—to go no further—to educate men who are kept occupied almost wholly in the mere getting of information or absorbing from 8 a.m. to 6 p.m., as is the case with the present third year class? There can be no healthy mental state under these conditions.

We should look the facts fairly in the face and reform our ways greatly, if not altogether. We should substitute education or development for the gathering of information with a minimum of development. This will imply our seeming—to superficial observation— to do less, but in reality to our accomplishing much more.

McGill may be hampered by the condition of things existing elsewhere, but unless we are blind to our failures reforms should begin at once. I have had the opportunity to test these principles on several occasions among our students and with the best results. But I have been helpless as regards any radical changes such as I believe are called for, though I have long profoundly distrusted that treatment of students, which, unfortunately, as I think, seems so satisfactory to many teachers.

You will now, if I have succeeded in making myself clear, understand the better the recommendations I am about to make. Physiology, though it is one of the great essentials in all sound medical education, is a sort of shifting sand heap. There is scarcely a single principle, perhaps not one, that is not liable to be changed any day by new investigations. This state of things is partly due to the inherent difficulty of the subject, and partly to the fact that confirmations of original researches are not encouraged and are rarely mentioned except incidentally. It results that most teachers must present to their students facts and principles on trust, for the field that any one man can cover with really valuable and wholly new investigation must be very limited. For six or eight years I have myself largely confined my investigations to the experimental examination of what I had to teach. This has not led to publication that brings reputation, but it has enabled me to be a much more helpful guide to my students especially in those departments of the subject which I have been able to work out by experimental investigation.

It seems to me that the time has come for a further evolution in University teachers. We can no longer expect the one man to be at the same time the highest kind of teacher in the sense in which I use the term in this communication, and also a first-class investigator making really important original discoveries. I would remind you that here in McGill we have had a department in which this differentiation led

to the happiest results. In the Physics Department we had in Professor Cox an admirable, if not even an ideal, teacher; and in Professors Callendor and Rutherford two rare investigators. It would have been a hardship to have expected frequent original results from Professor Cox, and it would have been wasteful and almost educationally criminal to have consigned such men as Professors Callendor and Rutherford to teaching.

My recommendations for the reorganization of the Physiological Department then take the following form:

1. I would have a complete reorganization, and would not seek to retain any teacher now employed who may indicate that he would prefer to resign. This is said with all respect for the present members of the staff. Little reliance is to be placed on teachers engaged in medical practice, especially as regards laboratory work or investigation.

2. There should be a head for the Department who shall be a natural organizer and teacher; one who believes strongly in the importance of doing the best possible for undergraduate students; one who has had experience in various kinds of teaching; a man especially of broad views; one who believes that medicine is biology, who is dissatisfied with the present condition of medical education and desirous of improving it, and who believes in constant research with a view to know what to teach, as well as—to a much less extent—with a view to publication.

Such a man may be hard to find, and I don't think that money alone will discover him.

3. In addition, a man who shall have practically nothing to do with the ordinary teaching courses, but who shall devote his whole time and energy to original research of a high class and worthy of publication.

The researches should be of a broad character in the physiological laboratory, because I think the sooner laboratories can be established in connexion with each hospital in which the problems of the clinician can be worked out, the better. I would have the hospital laboratories separate from the general physiological laboratory, though in friendly association, for purposes of reference, etc., but not necessarily further connected. The purpose of the one is to keep physiology broad; of the other—the clinical—to work on narrower, practical problems such as arise in connexion with clinical medicine, in which, of course, questions of chemistry, pathology, etc., would be considered as well as those of physiology. Many problems require investigation from several points of view.

The investigator of the physiological laboratory should be an independent research worker requiring neither assistance nor supervision.

He might be engaged for a limited period, as it is always difficult to judge how a man may turn out in a new environment.

4. There should be a third man (who would not have the title of professor) to give himself chiefly to teaching, to act as an assistant to the head of the Department, and who might also assist the chief investigator or carry on independent research work, though he would likely not have much time for either during the regular college year. The division of the work into chiefly teaching and wholly research seems to me of the greatest importance.

If the above scheme could be carried out with what it implies, such as the utilization of some of our own graduates or those of other universities in research, etc., I am satisfied that a department of physiology could be established at McGill, such as scarcely exists anywhere else in America at least—always provided that the right men are secured.

Such a scheme would be expensive; but if it could become a reality. I would feel that it had been worth while for me, as a pioneer, to have held on to the department of physiology through evil and through good report, as I have tried to do, up to the present.

I would again reiterate my belief that it is our duty to present to the Governors of the University plans for high achievement. It is for others to provide the money required to make them effective.

LOUISE BOURGEOIS AND SOME OTHERS.

BY

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While in Canada and the United States the midwife is but little known outside of those sections of the larger cities populated by the most recent arrivals from Central Europe, anyone who has visited the large obstetric clinics on the Continent, or even in Great Britain, has realized the important place taken by the midwives in those institutions. On that account a short review of the most remarkable of the women known to obstetric history may be of interest ; and since to enter fully into details respecting each of these would take too much time, I have confined my particular attention to one, Louise Bourgecis, possibly the best known, and shall give but a few words to most of the others.

NOTE.—This paper contains extracts from Fasbender's "Geschichte der Geburtshülfe," and Witkowski's "Accoucheurs et sages femmes célèbres," "Les Accouchements a la Cour," and "Accouchements chez tous les peuples," made and arranged for the McGill Reporting Club, February 13th, 1910.

Among the earliest theological controversies were heated arguments as to Adam's course with regard to the umbilical cord of Cain and Abel, and again over the Scriptural record that "God created man in His own image, *male and female* created He them." The latter was the starting point for a very warm controversy upon the question of reproduction. Many writers conceived the earliest of our parents as hermaphrodites, and St. Thomas went so far as to say that in the state of innocence man was reproduced by faith alone, that the organs of generation were the indelible mark of his sin and folly. The necessity for the female in reproduction gave rise to the idea of the Ancients that Lilith was the first wife of Adam.

The first mention of a midwife, of which we have any record, is in Exodus i, xv. where we are told of Puah and Shiphrah who received the command of Herod to kill off the male children born to the Hebrew women. It is suggested that this was to be accomplished by leaving the umbilical cord without ligature, but the origin of this belief I have been unable to find. It is interesting to know, in view of our experience now with Hebrew women, that the explanation given by these midwives for their failure to destroy the male children born, was, "that the Hebrews are not as the Egyptians, but are lively, and are delivered before the midwife comes to them."

In the Greek era we find four famous midwives, Elephantis, Olympia, Aspasia, and Laïs, the last named a celebrated courtizan, famous for her skill in inducing abortion. Also, we read of one Agnodice, who defied certain Athenian laws relating to the employment of midwives. She studied under Herophilus, then disguised herself as a man, and went about revealing her identity to those in labour. There was a consequent falling off in the practice of many of the accoucheurs, who thereupon accused Agnodice of being a "debauché and a corrupter," and said in fact that many women simulated illness in order to have her (him) called. Summoned before the Areopagus, Agnodice saved herself by revealing her identity, only to be met with more serious charges. This time, the suffragettes of Athens, interested in her behalf, rose in their might, and the obnoxious regulation of the Athenian court was withdrawn. This is a very good story, but is probably untrue, as we know that Phenaréte, the mother of Socrates, was a midwife, that Cleopatra wrote a treatise on the diseases of women and described a pessary, and that Artemesia, Queen of Caria (B.C. 350) was also renowned as a midwife. It is questionable, therefore, whether the confinements of ancient Greece were not wholly supervised by midwives.

Certain beliefs and practices dating from a still earlier time lent much to the mystery and superstition surrounding conception, impreg-

nation and delivery, and made it possible for these matters to be left for centuries under the supervision of the Church, which in turn controlled the midwives. For example, the question of sterility was determined by wrapping the standing patient in a mantle, then fumigating from below. If the fumes emanated from the mouth or nostrils of the patient so wrapped up, it was a sign of fecundity. Again, the Rabb Kahana recognised virginity by the odor of wine that could be detected at the vulva. The questions of virginity and fecundity were extremely important and we find in the Talmud, and indeed all down through the earliest literature, various means for their investigation and determination. For example, the diagnosis of virginity by loss of blood at copulation might be unsatisfactory, and when in doubt a further test was made much in the same way as already described for fecundity, that is, fumigating below and ascertaining whether the odor of the fumes could be determined by the nostrils of the patient herself. Examination was considered necessary if this test was likewise unsatisfactory. In a very early treatise, the Haghigah, we find reference to the so-called "aura seminalis." It was suggested that a woman might be impregnated by bathing in water in which males were wont to bathe. A corollary to this was found in the belief that in the Fountain of Conato, which ran at the foot of Mount Argos, one might bathe and reacquire virginity. We are not told if the bathers were masked. Other precepts, from the same source, were that impregnation could not occur from a single cohabitation, and that pregnancy dated from the intercourse nearest to the menstrual period. Hence too the belief, which has come down to us, that a seven months' child would live and an eight months' child would die; and that further if the mother and child died, the child invariably perished first. An observation of movement after maternal death, which might have been taken as contrary to this precept, was explained by a comparison of these movements to those of the severed tail of a lizard.

One, Trotula, of the School of Salerno, in the middle of the eleventh century, obtained much renown. She believed that fumigation, sneezing, coral about the neck, or the placing of a large magnet in the right hand would aid difficult labour. She was the first to teach the reposition of prolapsed members, and rehabilitated the teaching of Soranus with reference to supporting the distending perineum with cloths. She too was the first to mention a complete tear of the perineum and its repair. Still another interesting character was one Marguerite Cobbe, who attended Elizabeth Woodville, the wife of Edward IV. at the birth of the two princes, later murdered in the Tower. She obtained for her services, by letters patent, April 15th, 1470, an annuity of ten pounds sterling.

As evidence of the social standing of the Art it may be mentioned that Yolande d'Aragon, the mother-in-law of Charles VII., assisted Mesdames de Gaucourt and DeFienes in deciding upon the question of the virginity of Joan of Arc.

In France, up to the year 1200, the Church controlled the midwives. In this year the Faculty of Medicine was created and from this time it became customary in the more difficult confinements to call the aid of a surgeon. The earliest official record for Paris, that for the year 1290, gives the name of but two midwives or "ventrières." These ventrières were charged at the Chatelet with the decision of all medico-legal questions, in addition to their duties as midwives. In 1378 they were attached to the Hotel Dieu, and in 1385 we find them for the first time mentioned as "Jures du Roi." The origin of the name ventrière seems to be in the custom of stroking the abdomen with ointments to facilitate the birth and lessen the pain. The first legal regulation of the ventrières dates from 1560 when we find it enacted that applicants for the position must bring a witness of their moral character, must pass an examination before a physician, two surgeons and two senior midwives, then take the oath and obtain a diploma with the seal of the Provost. They were allowed a special emblem of office. It was their duty to report any practise by non-licencees, and to call to any difficult case a physician, a surgeon or one of the senior midwives. It was expressly stipulated that one of the surgeons was to give an anatomical demonstration yearly for their benefit. The register of the year 1601 contains 60 names.

Pre-eminent among all the French midwives of the period is one Louise Bourgeois. Unlike most of the others she was not attached to the Hotel Dieu, though those in attendance at the Hotel Dieu obtained greater experience and were, ex-officio, examiners of new candidates. Two midwives, La Dupuis, and Peronne Boyadon, both of the Hotel Dieu, were the examiners of Bourgeois, and the former objected to the candidate on the grounds that "being the wife of a surgeon, she will foregather with those cut-purses and we should receive rather artizans who know nothing of our affairs." All of which was probably true, but La Dupuis paid dearly for her candour.

Louise Bourgeois was the wife of a surgeon who, by her account, had studied for twenty years under Ambroise Paré, but whose later life had not been a success. Louise was led into the study and practice of midwifery, according to her own quaint story, by the advice of one who was struck by the remarkable way in which she herself had given birth to her children. Being able to read and write, she obtained much preliminary instruction from her husband and finally completed her studies

in Paris, where her first case was the confinement of the wife of a street porter. The report of this labour is amusing. "Struck by the large quantity of liquid that came with the child, and knowing how dangerous it was to allow a woman who had just been confined, to go to sleep, I addressed many questions to the patient during the time that I was occupied with the baby." Once she received no reply, and hurriedly placing the child on a pillow, she hastened to the patient, to find her in a swoon. With the aid of vinegar and water, recovery was prompt and complete. This successful case was the occasion for much gossip and she enjoyed great reputation among the poor. After five years of practice she was sworn in at Paris on the 12th of November, 1598, one of her examiners being, as noted previously, La Dupuis. From the time of the examination her one object was to pay back the obnoxious Dupuis, who had about this time been engaged by Henry IV. to attend the approaching confinement of Marie de Medici. Through the influence of the husband of one of her former patients, Bourgeois was brought to the notice of the Court Physicians, and was made the second choice (after La Dupuis, who, as said, had already been selected) to conduct the confinement. By circulating judiciously a slander of Dupuis, who was accused of causing the death of Gabrielle d'Estreés, a mistress of the King (who really died of eclampsia in her fourth confinement), she gave a deadly blow to her enemy, and after considerable further wire-pulling was finally selected, by the Queen herself, to take charge of the approaching labour.

Witkowski's book, "Les Accouchements à la Cour," gives an interesting account of the intrigue leading up to the employment of Bourgeois and of the confinement itself. A disinclination of some of her most powerful friends to introduce the midwife to the Queen, on the grounds that they themselves were most recently married; a very natural desire of the King that the attending midwife should be of great experience; and his anxiety during the actual course of the labour lest the Royal Household should fail to be present on time; the numerous suggestions by bystanders, during the labour, of methods to relieve pain; Bourgeois' politic manner of ingratiating herself with various members of the Court by means of ingenious covert signals of the sex of the new arrival (already promised as a boy in virtue of the King's conversion to Catholicism); her indignant resentment of attempts at familiarity by Henry, who was reported to have been on terms of great intimacy with Dupuis who acted for his many mistresses; and finally the commendations of the Court upon the successful termination of the labour,—all make most amusing reading.

The great success of the new midwife in this, the first confinement of

the Queen, naturally led to further engagements and success. Thus, in the Queen's second confinement, it is detailed how the efforts of Bourgeois were successful in preventing the engagement of a wet nurse, the wife of a patient of her husband, one who had undergone treatment for lues. At the birth of the third child, Christienne, the result was so satisfactory that the midwife was presented with a gold collar and chain as a badge of office. In the Queen's fourth confinement, when the Duke d'Orleans was born, the presentation was rightly recognized as a breech, and at the request of the King, Honoré, a well known surgeon in Paris at the time, was present but did not participate. At the fifth confinement, the birth of the Duke d'Anjou, which took place in the absence of the King, the child was born "face to pubes," or, as Bourgeois, says, "looking up to heaven." The midwife naïvely says that: "Not one in 100 is born so, and in all my experience I have not seen 30." She quaintly adds, "Seeing this, I considered it a good omen for France, and for himself, and was accordingly delighted." The midwife's delight seems to have infected the Court, and we are told that "one Mademoiselle de Renouillier, the first maid of honour to the Queen, was so violently embraced by one of the King's guards that though she had but one tooth he swallowed that." The sixth confinement, when Henrietta, afterwards the wife of Charles I. of England, was born, was made the occasion for the demand by Bourgeois for recognition of so much time lost in attendance upon the Queen. Through the intercession of the latter, a pension was proposed—600 crowns per annum,—and the King finally gave assent, though not on the terms demanded. He offered 300 crowns annually and for each male child a further 500 crowns, and for each female, 300 crowns. Unfortunately this pension ran for but a short time, as the following year the King died.

The association of the midwife and the Queen, however, did not end here, for the intimacy of the Queen with the Maréchal d'Ancre is well known, and was well known at the time. Two comments on this intimacy are worthy of repetition. On one occasion the Queen is said to have turned to a courtier with the demand,—"Apportez moi mon voile," —to be met with the smiling reply,—"Madame, un navire qui est à l'Ancre n'a pas autrement besoin de voiles," while at Paris a popular song of the time was,

"Si la reine alloit avoir
Un enfant dans le ventre
Il seroit bien noir
Car il seroit d'Ancre."

Whether on account of her influence with the Queen or no, Bourgeois was engaged to attend Madame de Montpensier, the wife of Gaston d'Orleans, who died in child-bed after the birth of the child later known as La Grande Mademoiselle. An autopsy was demanded by Marie de Medici and the findings are worthy of report in detail:—"We (here follow the names of seven surgeons among whom Guillemeau is probably the best known), have opened the body and carefully examined its interior; we found the cavity of the abdomen to contain bloody fluid, the intestines full of air, the liver dry and small, the gall bladder very large, the spleen increased in all its dimensions, the kidneys small and well formed and the bladder small. The uterus was bathed in the bloody fluid found in the hypogastrium, and was gangrenous from its neck to the fundus, particularly on the left side and that part touching on the rectum. On its right wall was found a small portion of the placenta that could be with difficulty separated by the fingers. We have found the lungs healthy and without any adhesion to the ribs, the heart very small, the pericardium almost without fluid. The brain was without any abnormality."

Could there be a truer picture of an acute puerperal infection?

Though Bourgeois was not specially mentioned in this report she believed herself attacked, and published a few days later a tirade entitled "The Apology of Louise Bourgeois, born Boursier, against the Report of the Physicians." "By your report," says she, "you make it well known that you understand nothing at all of the placenta and of the uterus of a woman, either before or after her confinement; no more than your master, Galen, who, having never married and having been but little concerned with women in labour, undertook to advise the midwives in a book, where he has distinctly shown that he never knew the pregnant uterus of a woman nor even the after-birth."

To this direct attack Guillemeau replied, and fixed the blame for the unfortunate result on the midwife's maladroit attempts to remove an adherent placenta. "The Princess was in labour from four in the morning till six in the afternoon. In order to deliver the after-birth, this good woman pressed for three quarters of an hour, but her difficulty was too great. The patient was made to eat fresh eggs, to place her fingers in her mouth, and to make much effort, exactly as if the treatment had been for the wife of a poor labourer. Her belly was pressed upon, as was also the uterus, without any consideration of what might occur after so much violence to a princess so susceptible and delicate. She complained of great pain on the left side where the compression and contusion had been the greatest; to this spot the patient, yet suffering princess carried her hand continually. She showed great

distress and told how much she suffered, yet there was no cessation to the bandaging and pulling to which her abdomen was subjected, and compression was made without any consideration of the pain it induced. What followed?—injury, inflammation and then gangrene."

Witkowski says: "The Bourgeois paid dear for her susceptibility; she lost the confidence of the Court and the aristocracy and she was then 64 years of age."

Bourgeois' chief contribution to the literature of obstetrics, is contained in her well known "Instruction à ma fille," where she lays down many principles which are not without interest even at the present day. It is impossible to translate this lengthy article in detail; suffice it to say, that she starts in by exhorting her daughter to understand fully all the details of her chosen profession. Her own success is ascribed to the intercession of Phenaréte, the mother of Socrates, who has been ever her guiding star. The daughter starts out under particularly favourable auspices for "a physician is the husband of your sister, your husband will be a physician, one of your brothers is a graduate in pharmacy, your father is a surgeon, and I am a midwife. The medical body is intact in our house."

"When those of experience instruct others concerning the difficulties they have met, and how they have escaped perils, it is possible for those so guided to move more smoothly along their chosen road."

"Hide nothing of the remedies that you find good, from physicians and wise men, otherwise you are no better than a charlatan."

"For no gain under Heaven give yourself to practises as do those damned ones who give remedies to induce abortion; even those who come for the remedies do you cruel wrong."

"Avoid those who look to you to innocently aid them in their damnable design, and send them to the physicians, which you can readily do, by saying that is an affair for them."

"Never ascribe occult powers to the membranes which sometimes cover the breech or shoulders of a child, and which the sorcerers are accustomed to use. Several, who otherwise I would have believed to be perfectly righteous people, have asked me for these things, and others have offered me money, but I have sent them away."

"There are enough midwives sufficiently foolish to be willing to enter into dishonest houses, and good ones should not destroy their honour by going with such people."

"Never take into your house for confinement either girl or woman." For this counsel Bourgeois gives in detail instances that have come under her notice where the result of the practice has been extremely disastrous. Among these is the following:—"I would tell you apropos of this, of a

woman well known in the Fauburg Ste. Germain, a midwife upright and renowned, who secretly delivered a courtizan, a whitened sepulchre, who appeared to be without any blemish. This unfortunate woman was attainted with lues, and gave the disease to the unfortunate midwife, at that time about 60 years of age, and ignorant of her condition. As a result of this contamination she infected some 35 families, not only the wives, but the husbands, and also the children through their mothers. There of course resulted serious domestic strife, and it was difficult to know what to do. It was found out that each woman had been delivered by the midwife, who was sent for to be examined. She came with her hand wrapped up, and it was found that there had been an injury to the hand, but that the trouble had nearly disappeared. Further examination was demanded which the midwife refused. The matter was finally arranged in an ingenious way. Two young women recently married, who were very anxious for care by this midwife, addressed themselves to an elderly surgeon, a widower, in the neighbourhood of the Abbey Ste. Germaine, and demanded whether it was possible to cure the woman without an examination. This being decided in the negative, they induced the surgeon by the promise of material advancement, to marry the midwife and then to treat her. In Bourgeois' words, "He married her and then he treated her. I knew them both."

Her comments on the difference between the young women of her own time and those of a later date are astonishingly modern:—"Formerly," she says, "in times gone by, children remained children for a long time. Now they resemble trees which flourish early and for a little time, but which the slightest wind prevents carrying fruit. All these evils come from the unusual liberty of the young women."

Her many comments on the inner life of the Court are from a more intimate standpoint than those to be obtained from other writers of the same period.

She notes the ill effect of the conversation of friends of the pregnant woman, and condemns the popular practice of visiting by friends who undertake to tell the pregnant woman of all the ills which may befall her. She points out the necessity for the presence of the midwife even though labour may terminate naturally, and how a very slight deviation from the normal may result in the death of mother and child.

She compares a woman in labour to a ship, or to again use her own words, "There is no comparison more apt in representing the pregnant woman and her confinement than to compare the process with navigation. The woman, a vessel of importance, carries a passenger, also of importance; the midwife is a pilot, the director of the vessel. I will say then that when such persons make a voyage, the first thing they

should do is to choose the wisest one they are able, one who knows how to raise or lower the sails, who knows a land where it is possible to anchor in order that the storm may pass, and who knows perfectly the mariner's chart and the compass, to the end that they may know at all hours of the day or night into what land the storm had thrown the vessel. This is more important since one may strike an island of savages or the land of the Turks, and there is nothing less to be desired than a cruel death or perpetual slavery. There is little similarity between a small ramification of a vein and the vena cava, or between the sea and a small river, (sic?) and yet sailors, either inexperienced or drunk may even in times of calm cause the loss of passengers or merchandise. How could a merchant place his life or his goods in such hands? There are those who have neither weight nor measure and do not understand how to guide a vessel with which they are charged. They make a noise as if they were going faster than the others, but they cost more than their weight in gold."

"Never show astonishment if things do not go as you expect, for surprise troubles your susceptibilities, and one who remains in command of herself is capable of surmounting all."

"Few women appreciate their midwives as they did in times past; these when the midwife died, took on mourning and prayed to God that they may have no more children. Now many engage midwives as an ordinary servant, changing each year, paying so much for so much done. Such are these young women who with their first children select a man to confine them. I blush for them. I assure you that neither their mother nor their grandmother were so cared for." She retails further an instance where, though she knew all was going well, the friends of the patient insisted on a consultation, and how it was possible for a surgeon to be admitted to the room and even to examine the patient without the patient's cognizance.

A suggestion with reference to the diagnosis of pregnancy is that the midwife should not meddle in these things, because reputation is a very delicate thing and she should wait until the confinement when she may be doubly sure.

To Bourgeois has often been accredited the rehabilitation of the operation of version which for about a thousand years had fallen into disuse. Later, and more careful investigation, showed that this rehabilitation of version should be attributed, not to Bourgeois, but to Ambroise Paré. For this we have the evidence of Guillemeau, who, after successfully treating a central placenta prævia in the daughter of his master Paré, noted that the success was not entirely his but should be rather attributed to his master from whom he learned the operation. Moreover Bourgeois in reporting the result of version in a similar case, says

that in earlier cases her results might have been more satisfactory had she, at that time, heard of the operation having been successfully practised some years before.

In addition to the account of the labours of the Queen, and her instructions to her daughter, Bourgeois' contributions to obstetrics are given in a book, "Diverse Observations on Sterility, Abortion, Fecundity, Delivery, and on the Diseases of Women and the New-born Child," 1690, which contains much of interest and value. Among the many interesting features may be noted the advice to use styptics in case of bleeding in pregnancy, and further the value of turning and extracting by means of the foot. She notes that the cervix in the cases where the placenta comes first, "is as soft as if labour had already well started." She refers to twelve different presentations of the child, and notes an abdominal presentation,—where the child's arms and legs are extended; she speaks of the danger of prolapse of the cord, making, so far as known in the history of obstetrics, the first reference to this accident. She believed that the cord must be immediately replaced or the blood would coagulate in the vessels and so cause the child to breathe in utero and die. After replacing the cord version should be undertaken in the intervals of the pains, and the child should be extracted by both feet. In transverse presentations one or other side might present, and here again version and extraction was the only treatment. In shoulder presentations she advises introducing the hand into the uterus, turning the child, and making the head present.

To replace a prolapsed arm, the hand of the child should be immersed in very cold water, or cold compresses should be applied about the arm. If these methods failed, replace the arm manually, then turn and extract. If both hands were prolapsed these would frequently draw back spontaneously if the patient was placed with the head low and the feet elevated. If this was unsuccessful cold water should be tried, and if this in turn failed, replace manually and then turn, either to make the head or the feet present.

In complete breech presentations, extraction should be made during pains; but in the incomplete breech, the foot should be secured in the interval, and extraction should be made during the pains. If the pains were weak the foot should be replaced, and then, when the pains are more severe, extraction could be accomplished by traction on both feet. In the complete variety, the foot should be secured before the breech fixed in the pelvis, for, if it was allowed to engage, the child came so doubled up that it was born only with great difficulty and with great danger to the mother.

Prolapse of the cord in head presentations might occur where there

was much liquor amnii, or if the waters escaped at a time when the cervix was not tight about the child's head. If this did occur the cord should be shoved up over the head, and, if it came down again, it should be replaced and a tampon applied, at the same time the patient should be postured with the pelvis elevated. Where there was prolapse of an arm in a head presentation, this posturing of the patient would generally suffice.

Bourgeois was the first to give an adequate description of face presentations. She notes the importance of not confusing face with breech presentations and gives a rational therapy, in the advice that in the majority of cases the child will be born spontaneously. Improper flexion of the head could be corrected by posturing of the patient; or, if not, the hand should be introduced and the correction made.

In all cases where a midwife was unsuccessful in her attempts to correct abnormalities, either a surgeon or another midwife should be called rather than allow the mother or child to perish.

The twelfth presentation of which she speaks is the normal head presentation. She notes the necessity of being careful in the delivery of the head, to note whether the cord is about the neck or no, and she says that there may be coils about the neck to the number of four. If it is impossible to draw the cord down over the head cut the cord and tie both ends. Here again is a new suggestion.

If the body of the child has been delayed after the delivery of the head, the finger should be introduced into either the anterior or posterior axilla, and the child so extracted. This again is a new idea. She says nothing of the care of the perineum,—was she sufficiently wise to know of the futility?

In one of her chapters she speaks of the delivery of the placenta, and of the necessity of placing the hand on the abdomen in order to determine its situation. Manual removal of the placenta she had never known to be necessary, and she would prefer to leave this operation to the surgeons—the first definite recognition of the danger of this proceeding. In still another chapter, she speaks of post partum hæmorrhage, advises bandaging the abdomen, and notes the value of cold compresses; particularly was it important that the patient should not be allowed to sleep. Further on, she notes the necessity of a true anatomical knowledge of the uterus and placenta in order to know how the latter may be properly expressed, and speaks of the value of attending post mortem examinations in order that such true knowledge may be obtained. Sad, that insufficient knowledge on these very points, and a post mortem examination, should be her undoing.

We have noted how Guillemeau saved the life of Paré's daughter by

version. In association with him at this time was one La Charonne, for whom he notes that he "had a high esteem." To even up, we now "blame it on the nurse."

Another prominent midwife in the 16th Century was Alice Massey, the midwife of Elizabeth, wife of Henry VII., who we are told received ten pounds a year for her services. An interesting detail too is recorded of one Elizabeth Gonsford, who baptised infants who were slow in being delivered, "In the name of the Father," etc., "I name thee Denis"—Is this the origin of the popular slang phrase?

About the year 1665, one Miss Willoughby, obtained great renown on account of her delivery of the daughter of a clock maker, "who knew nothing of her labour until she saw the child." This was made widely known by Dr. Willoughby, the father of the midwife, who also related how his daughter had recognized a breech presentation, and had brought him to confirm her diagnosis, how he had entered on his hands and knees at her suggestion, and made an examination, though of necessity so rapid, and under such excitement, that he was unable to confirm her opinion, which nevertheless proved to be a correct one.

Towards the end of the 17th Century one Lebany helped into the world James Francis Edward, the son of James II. Hugh Chamberlain, who was to have been present at the confinement, arrived too late, and accused the midwife of having substituted another child for the one expected. An action for damages resulted and the midwife received 500 guineas damages.

Up to this time, both in England and in Germany, the practice of obstetrics was prohibited to the men, and some of the midwives gained great fame. Marguerite Fuss, one of the most celebrated, was the daughter of one Katherine, a well-born, registered midwife. Married at 22 years, she herself had no children, and as her husband led a dissipated life she separated from him and began the practice of obstetrics, acting first as assistant to her mother, who later died and left her a small legacy. She studied at Strassburg, then, after two years, went to Cologne. On account of her recognized ability she was engaged by the Courts of Holland and Denmark where she had great success and obtained considerable remuneration. At an advanced age she accepted the position of midwife to the Princess Sybilla, of Brieg. Mother Marguerite, as she was known in Brieg, was a notable character and was one of the first to adopt the large bonnet and cloak which we are accustomed to see depicted as the characteristic garb of the midwife. Her attentions were not entirely occupied with obstetrics for we are told that she maintained order among the young women of the Court; also that during the serious illness of her patron she had a disagreement with the physicians

in charge, over the treatment employed. She promised that if she was allowed to treat the case in her own way recovery would be certain. Unfortunately death ensued, and Marguerite herself died of chagrin. Her funeral was conducted with great pomp and she was given a special tomb by the side of her mistress. Her obstetric instruments were divided among the midwives of the Duchy and we are told that greatest among the services for which she was honored, was the introduction of the syringe into the Duchy of Brieg.

Of the midwives attached to the Hotel Dieu in the 18th Century was one Marie Duges, born in 1730, died 1797. She too was the daughter of a midwife, one Jonet, and in turn, her daughter was the famous Madame Lachapelle. Duges' services to the Court of Louis XVI. were made the object of special mark and reward, and when, in spite of her great skill, the results at the Hotel Dieu were found to be not at all satisfactory, the Convention of 1795, at her request, transferred the Maternity to the Convent of Port Royal, which from this time on became known as the Hospital of the Maternity.

The most famous character in the 18th Century is probably an English woman, one Elizabeth Nihell. This woman was admitted to the Hotel Dieu, at Paris, in 1747, thanks to the protection of the Duke of Orleans, and in spite of the fact that she was a Protestant. After her return to England, she waged vigorous warfare against the accoucheurs of London, who were attempting to supplant the midwives, and she attacked Smellie with special vehemence. Among her tirades against him occurs the following: "He accuses us of being particularly interested. I am able to prove that I have delivered more than 900 women, free and for charity. I doubt that our worthy doctor has done as much, at least if he does not count as charity cases the deliveries he has made on the manniken which serves him as a model for the students. This, is a wooden effigy, representing a pregnant woman, the belly of leather, and a small bladder, filled with beer, taking the place of the uterus. This bladder is closed with a noose, to which is attached a cord, which can be pulled at any moment and so demonstrate the rupture of the membranes. Lastly within the bladder is a wax doll with which is demonsrtated the different positions. This admirable mechanism is of great renown among the accoucheurs scattered through London and the country. According to Smellie's own admission he has within the past ten years, instructed 900 pupils, not to speak of the midwives, in the same miraculous manner. These worthy pupils, instructed in such a manner, are they not particularly capable of judging the condition of pregnant women and of the infant they bear? Are they not truly 'au fait' with the subject of anatomy which is especially insisted

upon for the midwives? And should they not have a fine tact, subtilty and knowledge, and be able to recognize at once the analogy between such a machine and a body, sensitive, delicate, and well organized." She waged particular war against the use of instruments, a grave problem at this time, and here she undoubtedly did a great deal of good. She says that in spite of the smiling way in which the instruments are recommended to the suffering patient, the assurance that they will do no harm, that the child will not be at all marked, or if at all very little, all the time the operator "lies like an ordinary tooth-puller."

The 19th Century brings to our notice Madame Lachapelle (b. 1769, d. 1829). It is noted of her that she rarely employed a forceps but when obliged to do so took care to show it to the patient, to explain it use, and to demonstrate its necessity, and advantages; so assured the patient had no hesitation in leaving herself, with confidence, to her dexterity. She was well known as the "Good Madame Lachapelle." It is noted that her conversation was agreeable and not without originality; when a serious tear was produced during the course of a labour, she simply smiled and said "Bah, the rascal will now come all the easier." Later again was one Marie Bovin, born in 1773, died 1841. Mme. Boivin was a Doctor of Medicine of the University of Marburg, and was decorated by the King of Prussia. At one time she had hopes of being received as associate of the Academy of Medicine, at Paris, but having failed in her candidacy took the matter quite calmly, saying "the midwives of the Academy had no use for me." She wrote a book on obstetrics noted for its excellent illustrations. The success of her work aroused the jealousy of Madame Lachapelle, the Directress of the Maternity, who did her best to undermine Boivin. Dupuytren is said to have remarked of Boivin, "she has an eye at the end of her finger." Her chief contribution to obstetrics was the modification of the speculum, a rounding of the edges which permitted the introduction without pain.

Marie Louise Rondet, born at Sudan, 1800, is noted for the invention of the laryngeal tube for the resuscitation of asphyxiated infants. The instrument was undoubtedly invented by Rondet, but the Academy attributed the basal idea to one of its members, Chaussier, "for, the idea of filling the lungs of asphyxiated infants with air, was common to all physicians possessing even the slightest notions of physiology."

For Americans a name of importance is Elizabeth Blackwell. This woman, a teacher in one of the common schools of Kentucky, took up the study of medicine as a pastime and was accustomed for a long time to practice the art among the poor women of her district. This irregular practice was not satisfactory, inasmuch as it seemed often more danger-

ous than advantageous for the sick, and moreover she wished to have the legal right to practice medicine. In May, 1840, she went to Philadelphia and vainly demanded to be admitted as a student in one of the schools of medicine. Permission was refused, but finally, after having specially studied anatomy and physiology, she was admitted to the school at Geneva, New York. It is worthy of note that the Faculty on this occasion left the decision regarding the admission of Miss Blackwell to the students, and they, after serious discussion, decided that it was only right that she should be admitted. She entered in November, 1842, and from the time of her admission till graduation it is noted that she stood always at the head of the various classes. After obtaining her diploma, in 1874, she continued her study in England, Germany, and at last in Paris. After considerable difficulty she entered the Maternity, thanks to special dispensation, and later settled in New York as professor of hygiene in one of the medical schools there.

FIVE CASES OF TUBERCULOSIS OF, AND ABOUT, THE EYES.

BY

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The following series of five cases of tuberculosis of the eyes, rather a rare affection in this part of the world, occurring at short intervals, together with one of the ear drum, which was treated in the same manner and with similar result, form a group, interesting both from a statistical point of view and from the results obtained, the latter seeming to indicate that the method of treatment followed is well worth extended and careful trial.

I am indebted to Dr. G. A. Brown, who is in charge of the clinic for tuberculosis at the Montreal Dispensary, for suggesting the remedy used, and for carrying out the detail of most of these cases. The treatment followed consisted in injecting hypodermically four grains of iodoform once or twice a week, according to the severity of the case; the preparation used being a mixture of twenty per cent. of powdered iodoform with paraffin oil containing one per cent. of carbolic acid.

Details of pulse and temperature, and the routine use of mydriatics, analgesics, etc., have not been included in the report, since they furnish no points of special interest.

Case I.—R. U., a little girl aged seven, who was brought to the Montreal Dispensary for advice as to her eyes was, on examination, found to have a sinus leading into each of the lacrymal sacs; that on the

right being quite small, piercing the tissues just above the internal palpebral ligament; and surrounded by a strawberry-coloured area about the size of a split pea. On the left side a larger sinus opened into the lower part of the sac, around which was a mass of reddened and infiltrated tissue about the size of a currant.

From the unusual position of the perforation on the right side, and the infiltrated tissue, a provisional diagnosis of tuberculosis of the lacrymal sacs was made.

Both sacs were treated by probing once, and syringing every second day with a mild alkaline solution, after which a few drops of solution of bichloride of mercury were injected.

Under this treatment the fistulæ closed promptly, but the infiltrated areas did not diminish in size, and after a few weeks the sinuses reopened and the discharge was re-established. The tumour on the left side had increased both in extent and prominence, and involved the under-lying bone. The appearance of the altered tissue was now quite characteristic of tuberculosis, and the presence of great numbers of tubercle bacilli in the abundant discharge confirmed the diagnosis of tuberculosis of the lacrymal sacs.

The child was referred to the clinic for tuberculosis for treatment with iodoform injections, and as we were anxious to test the effect of the drug in this case, all local treatment was for the time withheld.

The sinus on the right side closed almost immediately, and the tissues about it began to blanch; once only was there a recrudescence of the inflammation, but this lasted only a day or two and was not accompanied by reopening of the sinus. On the left side the discharge lessened but slowly; the tuberculoma, however, diminished fairly rapidly and steadily until, after about three months, it had practically disappeared. Local treatment was now again employed to check the discharge and to close the opening, resulting in a short time in healing of the sinus and apparent reestablishment of function.

The child was seen about a year after treatment had been discontinued; there was no sign of recurrence, and a year later the mother reported all well.

Case II.—I. R., a girl aged 18 years, came to the Montreal Dispensary for treatment, the right eye being inflamed.

Examination showed a condition quite similar to that caused by a mild attack of interstitial keratitis, with uniform grayish infiltration extending from the limbus of the upper and inner quadrant to the centre of the cornea.

After a few days the infiltration became patchy in appearance, the intervening cornea becoming clearer and the opacities more dense;

and a little later still, there was loss of substance over the denser spots and general roughening of the surface.

She was treated in a routine manner for a couple of weeks, the condition of the eye becoming steadily worse. There was now some intensification of the inflammatory symptoms, the iris being involved in the process, becoming incarcerated by posterior synechiæ, and showing several tubercles on the anterior surface.

Further investigation of the case furnished no evidence of syphilis, nor was any tubercular focus found elsewhere on thorough examination of the patient; there was, however, some enlargement of the preauricular gland. One sister had a cervical adenitis, the immediate family history being otherwise negative.

The patient was sent to the Western Hospital, where the eye was opened and some powdered iodoform was introduced into the anterior chamber. There was almost no increase in the inflammatory symptoms after the operation, and she was in a few days referred back to the Dispensary for treatment.

Under a course of iodoform injections the eye steadily improved, and in three months' time she was discharged. There had, at this time, been no sign of inflammation for several weeks, the cornea showing a few lessening opacities, the vision being normal.

After an interval of about six weeks she again came to the clinic, the eye showing slight ciliary injection, and causing occasional pain and discomfort. Owing to the difference in the appearance of the eye from that presented at the beginning of the previous attack, it was at first thought that the condition was not due to the same cause, and some valuable time was lost before commencing treatment. Iodoform was again introduced into the anterior chamber, causing rather more reaction than previously, but before the hypodermic injections could be begun a second time the patient ceased attendance. After a period of more than a month she reappeared with the eye hopelessly disorganized, and requested me to remove it, since it was necessary that she should work for her living. In view of the possibility of general infection, and as the eye could at best be of but little use, this was accordingly done. Sections of the eye, kindly prepared for us by Dr. Tooke, furnished abundant evidence of tubercle.

Had this case been treated without interruption, from the time of the reappearance of the inflammation, I have little doubt that the eye would have been saved, an opinion which finds confirmation in the course of the subsequent cases.

Case III.—D. P., a girl aged eight years, who was referred to me by Dr. D. F. Gurd, at the end of December, for phlyctenule in the left eye,

which resisted treatment, presented appearances similar to the last case, though the corneal involvement was neither so uniform nor extensive. She was treated expectantly till the fifteenth of January, when the appearance of tubercle on the iris and loss of substance of the cornea justified a diagnosis of tuberculosis of the eye.

Examination by the patient's physician gave no evidence of tuberculosis elsewhere, excepting enlargement of the cervical glands of same side. Calmett reaction: two trials negative.

Excepting that the eye was not opened, the course, and, up to a certain point the treatment, were quite similar to those of the last case. Injections were begun in the middle of January and continued till the end of March. By this time the tubercles had disappeared, the inflammation had subsided, and the opacities had lessened in extent. The surface of the cornea, however, remained rough, and about the middle of May the eye became inflamed and treatment was again begun. On the twentieth of May two tubercles were seen in the cornea, which in another week had disappeared and the eye gave no further sign of active trouble.

At the end of June she left for the Laurentian Mountains, coming down once or twice during the summer for examination, the last injection being given on the tenth of July.

Late in September examination of the eye showed an elongated nebula across the cornea, no sign of involvement of the uvea was present, and with suitable correction normal vision was obtained. Up to the present time, more than a year afterwards, there has been no sign of recurrence.

Case IV.—J. McC., a woman aged twenty-six, came to the Montreal Dispensary with the right eye in a condition similar to that described in the last two cases, and was treated expectantly for a couple of weeks, though little doubt was entertained as to the diagnosis.

Some years previously she was in hospital for an intractable inflammatory affection of the eyes, no diagnosis being made, the subsidence of the symptoms being subsequent to the insertion of a seton in the right temple. She left the hospital with leucomata and synechiæ in both eyes, the visal acuity being much lowered. On the appearance of tubercle on the iris she was referred to the clinic for tuberculosis for treatment.

Examination revealed infiltration of the left apex with enlargement of the cervical glands of the same side. One sister had died from pulmonary tuberculosis

The points of interest in this case were the protracted course, lasting from August till the following June before active processes could be

said to have ceased, and the numerous crops of tubercle appearing in the iris, there being six or seven at least. The patient would come to the clinic, after a period during which the eye had shown no sign of active trouble, with ciliary injection and some increase of subjective symptoms.

This, as we soon learned, heralded the appearance of tubercles on the iris, which would form in a few day's time and by another week would have disappeared. The inflammatory signs would then subside, the only apparent difference being a lessening of the exudate, the absorption of which seemed to be facilitated by the exacerbation, which each time left the eye in better condition than before. The apparent beneficial effect of tubercle formation was strikingly illustrated in this case, being evidence of heightened resistance to, and not of extension of the disease.

In spite of former scarring, the patient, when tested about the end of September, could read 6/9 with correction, vision in right being better than that in the other eye. There was no dense opacity of the cornea although posterior synechiæ were fairly extensive.

I am not without hope that continued treatment may result in further freeing the iris as the use of iodoform seems to favour absorption of exudate. The eye, when last seen, had shown no sign of active trouble, and had been free from irritation for three months.

Case V.—R. B., aged 17, French-Canadian girl. This case was diagnosed from the appearance of the cornea, the patchy opacities subsequent to uniform infiltration being marked, while the subacute persistent type of inflammation was also characteristic. There was at no time definite tubercle formation which could be observed microscopically, although certain of the denser spots in the cornea were, in all probability, tubercles. The presence of a lesion in the right lung and of enlarged cervical glands on the same side, leaves, however, little doubt as to the correctness of the diagnosis. The absence of tubercle on the iris in this case is possibly due to the injections having been begun early, there being no period of expectant treatment as in the other cases.

In about four months' time the eye became quiescent, there being only a slight nebula on the cornea. Shortly afterwards the patient ceased attendance, although she had been told that further treatment would be necessary to eradicate the disease.

Recently she came again to the clinic after an absence of about three months, with a similar condition in the opposite eye, which, under treatment, is improving rapidly and should, in a few weeks time, be normal. The right eye shows no sign of recurrence.

While there is, of course, no justification for sweeping generalizations based upon such a limited series or results, still the fact that all cases improved while under treatment and retrogressed when it was withdrawn too soon is significant. The comparison, too, of the results with those usually obtained in this disease, i.e., commonly loss of the eye, is also striking.

While there is no guarantee that the disease will not recur in any of these cases, still I feel confident that should it do so, a short course of treatment will eradicate the trouble.

As iodoform seems to favour tubercle formation, which, so far as our observation goes, is always followed by dispersion and absorption, there is no tendency toward encapsulation, and the danger of the disease becoming dormant is practically nil, which lessens considerably the chance of recurrence. In those cases in which the disease has again shown activity it has always done so within six weeks and in all these patients the arrest of the process has lasted for a longer time, six months to over two years being the range, the fifth case which is still under treatment being, of course, excepted.

Although the employment of iodoform in tuberculosis is not of recent institution, yet the systematic use of hypodermic injections of it has not been at all general.

Some thirty years ago Bilroth deputed one of his assistants to test the use of iodoform in tuberculosis, and it was then noticed that when injected into the tissues around a sinus the drug was more efficacious than when injected into the sinus, as in the latter case it often remained for a considerable time almost unchanged in the cavity. These observations, however, do not seem to have been followed to their logical conclusion. Seeing that in one instance the remedy is employed outside the inflammatory barrier which nature has set up to oppose the progress of the pathological process, and that in the other it is available where most required, at the advancing point of the disease in the newly invaded tissues, there seems to be good reason for resorting to this method of using the drug.

The patients in this series, with one exception, belonged to the poorer class, and were without the beneficial effects of good hygienic surroundings and special diet; so that adventitious circumstances had no marked effect on the result.

The diagnosis has been confirmed in each case excepting the fifth, and although it may be urged that this case is one of ordinary interstitial keratitis, still the complete difference in course, appearance, and subjective symptoms, from the typical form of parenchymatous keratitis, the identity, in the same respects with the former cases of the series,

and the presence of tuberculosis elsewhere, leave, I think, no reasonable doubt as to the character of the trouble.

The history and course of the other tubercular lesions in these patients has not been given, but they will be published in the report of the Tuberculosis Clinic of the Montreal Dispensary. The patients are, at present, all doing well so far as is known.

Experience has shown though, that treatment should be kept up for some time after apparent cure, but as seen from the foregoing reports, the patients frequently fail to attend so soon as they think themselves cured.

While avoiding the vexed questions of "Cures for Tuberculosis," I think that the facts here reported, which I have endeavoured to give without embellishment of any kind, fully justify a careful and systematic investigation of the treatment; the only counter indication which I have met with as yet, being its use in cases of advanced tuberculosis, in which it is not well borne, and must, if used at all, be employed in very small doses. In these cases secondary infection always plays an important role, and upon this iodoform seems to exert no beneficial effect.

NOTE.—Since writing the above the symptoms in case V have quieted down and blazed again into activity. The patient has now been free from inflammation for three months.

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TYPHOID FEVER

We make no apology for publishing a report which has been made to the City Council of Montreal, through the Emergency Hospital Committee, upon the recent epidemic of typhoid fever. The report carries with it the authority of those who have made it, and should be regarded as final. The result of this investigation is summed up in the words: We find the evidence overwhelming that the chief cause of the disease is the water supply of the city and its suburbs. The remedy is proposed in equally plain terms: The future water supply of the city must be provided by a thorough system of filtration before distribution to the public.

The Finance Committee of the guarantors of the fund for the Typhoid Emergency Hospital, consisting of Sir Edward Clouston, Bart., Sir Hugh Graham, H. V. Meredith, F. W. Thompson, Lieut.-Col. Burland, H. S. Holt, and Hugh Paton, decided that it was necessary to go further than merely dealing with the existing situation, and that they should try to determine the cause of the outbreak and then make an effort to secure remedies. To this end a letter was sent to the authorities of McGill and Laval Universities inviting them to co-operate in the belief that such action would prove of lasting benefit to the community.

This invitation was promptly accepted by the English and French universities, and their leading experts were named a committee, which took up an investigation into the cause of the frequent recurrence of

typhoid outbreaks. After a full investigation, so far as was necessary, this joint committee has sent the following report to the Emergency Hospital committee:

Your letters of January 18th, 1910, regarding the cause of typhoid fever in Montreal, were, as you have been informed, duly received by the university authorities of Laval and McGill. These letters were referred to the Medical Faculties of the respective universities and a joint committee was appointed consisting of: J. G. Adami, professor of bacteriology and pathology; G. E. Armstrong, professor of clinical surgery; R. F. Ruttan, professor of chemistry; T. A. Starkey, professor of hygiene, representing McGill University, and A. Bernier, professor of bacteriology; J. J. Guerin, professor of clinical medicine; Henri Hervieux, professor of practice of medicine; E. P. Lachapelle, dean and professor of hygiene, representing the University of Laval.

To carry out the suggestion of the Finance Committee of the guarantors of the Typhoid Emergency Fund and make once more an exhaustive enquiry into the causes of typhoid in Montreal and its eradication would require a lengthy period of investigation, which might extend into years rather than months. The public interests seemed to demand that the universities if possible make an immediate pronouncement; thus instructions were given to their respective committees to consider and report upon the investigations made thus far.

In accordance with the above instructions this committee begs leave to submit the following conclusions and suggestions regarding the cause of typhoid fever in Montreal and the means of reducing or eradicating it:

We find the evidence overwhelming that the chief cause of the disease is the water supply of the city and its suburbs.

A study of the topography and spread of the disease and of the abundant analyses of the water supplies by such authorities in the universities as Professors Adami, Bernier, Bruere, Ruttan, Starkey, and the late Wyatt Johnston, all point in the one direction.

Many of the published analyses of the Provincial Board of Health; Dr. Anthony McGill, Government chief analyist; Dr. Milton Hersey, city official analyst; Dr. J. E. Laberge, and others, add to the evidence against the water supply.

The exhaustive investigations into the condition of the water supply of the city indicate that while the water may give favourable analyses for some months of the year, none of them are at all times safe. At certain times of the year the waters are actually bad and capable of giving rise to water borne diseases.

We do not consider that any further analyses or examination of the waters are necessary to establish the above conclusions.

It follows then that the future water supply of the city, whether it consists of unmixed St. Lawrence from south of Nun's Island or not, must be purified by a thorough system of filtration before distribution to the public.

To ensure the proper working of the plant, constant supervision of this filtered water by an expert water analyst, devoting his entire time to the work, is an essential part of such a system.

THE RETIREMENT OF WESLEY MILLS.

It becomes our duty to convey to the graduates of McGill University the information that Dr. Wesley Mills has resigned his position as Professor of Physiology in McGill University; and that, at length, his name has been enrolled amongst the Professors Emeriti of the University. As appropriate comment upon the event we cannot do better than to publish the following transcript of a minute which was adopted by the Board of Governors: "In accepting the resignation of Professor Wesley Mills, as tendered in his letter of 10th February, 1910, the Board of Governors desires to express its great appreciation of Dr. Mills' services during the long period in which he has been connected with the University. The Board is aware that Dr. Mills' record of teaching and research in the Departments of Physiology and Comparative Psychology has given him a distinguished place in the ranks of scientific workers; whilst his unselfish devotion to the interests of his subject, and the high ideals which he has always cherished, have extended the sphere of his influence even beyond the limits of the class room and the laboratory. The Board has pleasure in resolving to enrol the name of Dr. T. Wesley Mills in the lists of Professors Emeriti of the University." And so after more than twenty-five years' service Dr. Mills has entered into retirement, enjoying, we are glad to learn, the benefits of the Carnegie Foundation for the Advancement of Teaching.

Dr. T. Wesley Mills was born in Ontario, where he received such education as was given in the Ontario schools in those days. He entered the University of Toronto, where he graduated with the degree of Bachelor of Arts, and afterwards obtained the Master's degree. In very early life he acquired a bent towards physiology and hygiene under the hands of Mr. William Carlyle who, in physique and character, was an example of what his own teaching aimed to do. Mr. Carlyle was a nephew of Thomas Carlyle and is now a School Inspector, residing in Brantford. As an Arts student, Dr. Mills attended occasional lectures in the Medical

Faculty and was greatly inspired by the Professor of Physiology, Dr. James Bovell, under whom Dr. Osler had studied privately, and to whom he has dedicated his "Practice of Medicine."

Dr. Mills then came to Montreal with the intention of continuing the study of music, especially the violin which has been his constant companion ever since. It was due to Osler's advice and to the influence of the late R.P. Howard, that he resumed the study of medicine in McGill University.

After graduating at McGill he served two years as resident official and medical superintendent of the Hamilton Hospital. Then he went to England for study in clinical medicine, and in physiology and histology under Schaefer and Burdon-Sanderson. Next he proceeded to Germany, where he studied the nervous system under Goltz, of Strassburg, and physiological chemistry with that great pioneer and enthusiastic teacher, Hoppe-Seyler.

He began his career at McGill as assistant to Dr. Osler in teaching physiology and histology when he introduced courses of demonstrations and practical work. For three years Dr. Mills practiced in Montreal as laryngologist, in preparation for which he studied in London under Dr., later, Sir Morrell Mackenzie, to whom he had been introduced by his brother, Dr., afterwards Sir Stephen Mackenzie.

At McGill Dr. Mills succeeded Dr. Osler who had taught not only physiology and histology, but also pathology and clinical medicine. Before Osler left, Dr. Mills had introduced an extensive course in practical physiology which consisted in part of experiments on living animals. These were rather tolerated than welcomed by the majority of the students who had not yet begun to look upon higher physiology as anything more than a necessary evil. Amongst his student assistants was the late Wyatt Johnston. If one remembers aright, these new ideas were not received with much enthusiasm, although the late James Stewart gave much encouragement to the new teaching.

At that time Dr. Mills lived in Westmount, which was then composed largely of open fields and there he kept, and bred, a variety of animals, chiefly, dogs, fowls, and pigeons, but also many other small animals. Here he made extensive researches on the physical and psychic development of young animals. These were originally published in the "Transactions of the Royal Society of Canada," of which he was a fellow. Most of them, and several others on psychological subjects with a part of the Proceedings of the Society for the study of animal intelligence etc., were published in book form as "The Nature and Development of Animal Intelligence" (London, Fisher Unwin; New York, Macmillans.) This was a pioneer work on the subject.

About the same time was published "Animal Physiology," which included chapters on general biology, evolution, and a full treatment of embryology. This doomed the book commercially, though it was favourably reviewed on all hands. This also was a pioneer work and anticipated what has since came about: the teaching of biology and embryology as separate departments. A work on the Dog has been for many years in considerable demand.

He also taught physiology to Veterinary students in the Montreal Veterinary College, later the Faculty of Comparative Medicine, and conducted classes in Cynology, and founded the Society for the Study of Animal Intelligence, which met in the College and whose proceedings were published from time to time.

Dr. Mills has always spoken in high terms of the encouragement given to all good things by Dr. Duncan McEachran; and the students of this Faculty, though less favoured by previous educational opportunities, so far as book knowledge went, always gave him warm support.

Dr. Mills has always had a sensitive ear and a strong literary and æsthetic bent. This was the prime cause of his taking to laryngology, as he wished to benefit speakers and singers. In his work of three years ago, his latest book, "Voice Production, based on Scientific principles," he endeavoured to give to singers and speakers, especially teachers of these departments, a better foundation on which to build their practice. The work was published by J. B. Lippincott and Co. of Philadelphia, and by J. Curwen and Sons, London, and has gone into a third American and a second English edition.

He has published some six books in all, and many researches on physiology and kindred subjects. In physiology most of his original work was done on the heart, the nervous system and the voice. Dr. Mills lost nearly all his effects in the recent McGill fire, including almost his entire library and a large collection of microscopic and other preparations on the nervous system, which in part represented the results of original research. As a consequence the contemplated original monograph had to be abandoned.

Neither at home nor abroad has Dr. Mills ever been a purely academic physiologist, though always a keen advocate for scientific medicine.

From the first Dr. Mills identified himself with the Montreal Medico-Chirurgical Society, was always a regular attendant at its meetings and a frequent contributor to its proceedings.

Three years ago he occupied the presidential chair.

He founded the Society for reporting original researches, now flourishing, about eight years ago. Dr. Mills always regarded his greatest work as teaching. He taught a country school at 17 years of age and

walked five miles twice a day in doing it. He was the professional pioneer of physiology and comparative psychology in Canada, 28 years ago, and has been at the head of the physiological department for 25 years. He was President of, and had much to do with, the Natural History Society of Montreal, and is a member of many American Scientific Societies. The fundamental principles of his teaching have been somewhat as follows:—1. Physiology and medicine are biology; 2. Physiology should rest on a comparative basis, and be tanght to a greater or less extent accordingly in the first instance; 3. Medicine is to a large extent scientific physiology, or in a wider sense biology, and this should be recognized in the teaching of all its departments. The practice of medicine is applied biology.

Dr. Mills always contended that the student is in a medical school to be educated, not to be filled up with a mass of details. He should be taught to get knowledge for himself, and in his case, as with all men, the object of his life should be the highest possible development of the individual.

Dr. Mills enters into retirement for two reasons: (1) That the Department of Physiology may have a fuller and more rapid development than he could bring about in view of his failure of health last year, and feeling the need of a year or two to get back to his former self physically. (2) He has always given the best that was in him to his students and to McGill, and now feels that there are parts of his nature which can be fully developed and ends he would attain only if he be free from the arduous work of teaching, etc.

In a private letter to a friend who had written to him upon the occasion of his retirement Dr. Mills says: "Much of the time in the early years I was everything down to laboratory servant. I should say, however, that during the whole period I have had assistants they have proved both good colleagues and gentlemen. They have always been most loyal to me. Dr. W. S. Morrow has for 16 years been my chief lieutenant, and to him, most of all, I am indebted for unwavering support. The upbuilding of the laboratory and the organization and carrying out of practical work have been in a large measure in his hands, though we have all worked together as one man to attain the end in view.

Letter to the Editor.

Sherbrooke, Que, March 10, 1910.

The Editor Montreal Medical Journal.

In regard to the patient J., shown as a living case at the Montreal Medico-Chirurgical Society by Dr. Shirres, and reported in the February number of the Montreal Medical Journal, I thought that a summary of the early history of the case would be of interest to the Montreal medical men, as the history given in the Journal is hardly correct.

My partner, Dr. Williams, was asked to examine the patient some four weeks after the accident, in order that his opinion might be obtained in regard to operative interference. He considered the condition purely functional and stated that an operation was contraindicated, at the same time expressing a wish that I should examine the case.

When I saw the patient he was up and about the ward, and he stated that while confined to bed he was able to use his legs and arms freely, and did not know that he would have any difficulty in walking until he attempted to get up. He also said that he had been catheterized for retention of urine for a short time, but that he had been able to pass it fairly comfortably for several days.

Examination:—Patient is a slight, small man, rather poor musculature, with an anxious, staring expression.

General organs, healthy.

Cranial Nerves.—I. Smell, R-L; ol. menth. pip. and turpentine tests.

II. Sight, somewhat deficient, has worn glasses for some years. No hemianopsia, no changes in the colour fields, fundus normal, although centre of optic disk is a little paler than usual.

III., IV., VI. Eye movements free in all directions, marked nystagmus present. No double vision, or ptosis, although he gives history of seeing double some years ago. Pupils equal and active to light and accommodation.

V. Trigeminal sensory area, normal; motor power, masseters normal; corneal, palpebral and conjunctival reflex is present, R-L. Supraorbital infraorbital and mental ponits, negative.

VII. Motor functions, R-L; all movements of facial muscles, wrinkling of forehead, closing of eyes, whistling, puffiing cheeks, etc., symetrical; emotional movements also equal. Speech apt to be a little hesitating and jerky. Tongue is protruded in middle line and has a rather coarse tremour. Slight tic of facial muscles.

VIII. Hearing, R-L., watch 1½ ft. Says his hearing has not been very good of late.

IX., X., XII. Negative. Pharyngeal reflex present.

XI. Negative.

Upper Extremities.—No atrophy or hypertrophy, muscular force equal and fairly good. No paresis or paralysis. All reflexes markedly increased. Tremor not present at rest, but marked on exertion,—intention type. Finger nose test, and finger finger test, imperfectly performed but co-ordination is fair.

Sensory Perceptions.—Muscle position, stereognosis, touch, pain, sharp and dull point, heat and cold, localization, all normal.

Subjectively patient complained of periodic numbness of hands.

Trunk.—No paralysis or atrophy. Slight dermo-graphia. Points of tenderness over 6th dorsal spine, and from 12th dorsal to 3rd lumbar spines. The four latter spines showed decided prominence. Abdominal and cremasteric reflexes normal.

Sensory Disturbances.—None, except in an area on back bounded by ribs above, and roughly by pelvis below, where there was moderate hyperæsthesia, and thermo-anæsthesia so marked that differences of 32° F. to 120° F. could not be differentiated. There was no disturbance of tactile sensation in this area, and sharp point could be differentiated from blunt point. The skin over sacrum was somewhat hyperæsthestic.

Bladder.—No retention but some slowness in voiding, following previous retention.

Rectum.—Evacuation normal. Enemas have been used.

Lower Extremities.—No atrophy or hypertrophy R-L. Marked tremor and spasm of muscles on attempted exertion, none while at rest. This condition is most marked when patient attempts to walk. Spurious ankle clonus may be elicited at times. Muscular power fairly good. Knee jerk much increased: R-L. Achilles also increased, R-L.

Plantar reflex varies. At times no response; at other times slight plantar reflexion. Babinski's sign not present, paradoxical reflex not present. Oppenheim's not present. Slight Romberg's.

The walk is spastic, with tendency for patient to trip over his toes, and a tremor is present which shakes the patient all over. He can walk alone, but with difficulty.

Sensory.—Heel-knee test; slight ataxia, complicated by the intention tremor R-L. Sensation to touch, pain, heat and cold normal.

Mental Condition.—Patient shows much interest in the examination. Answers all questions intelligently and accurately. Memory for dates and facts excellent. Assists in all examinations to the best of his ability and seems to appreciate being the centre of interest.

Subsequent to this examination he developed a peculiar tic in which his head was thrown backward at the rate of 60 to 70 per minute when not under direct observation, but when he knew that he was watched it

would increase to 100 or more. Very soon he began to have typical hysterical convulsions in which he writhed and groaned with muscles in tonic and clonic contraction. He did not bite his tongue or have involuntary micturition nor injure himself in any way, and, in fact, was a text-book case of hysteria major, even selecting the hour of 7 p.m. when night and day nurses were assembled in the ward, for his exhibition. The patient gradually became bedridden.

In regard to the diagnosis, it was evident that the main condition was functional, although retention of urine, loss of thermo-sensation and nystagmus were all suggestive of organic trouble. The nystagmus I put down as a relic of his old trouble, for which he received some eight months' treatment at Queen's Square, or to some congenital condition; for patient stated that it had been present all his life as far as he knew. To account for the thermo-anæsthesia, I made a provisional diagnosis of small hemorrhages in the posterior part of the spinal grey matter. On account of the functional character of the other elements, I was inclined to "hedge" a little here and wait for developments, but as the condition has not yet cleared up (March 8th), I still think the diagnosis justified. The temporary retention, I put down to a temporary derangement of the cord such as is not infrequently found after a profound shock of any kind. The question of spinal compression due to fracture was, of course, never considered except to emphatically state that it was not present, and that operative interference was not to be thought of.

In regard to an X-Ray examination, I made one in our office, on special request, and could find no indication of trouble with the fluoroscope, although, naturally, this examination was not very satisfactory. To take an X-Ray photograph meant anæsthetising the patient in order to keep him still, and this I considered unjustifiable, as there were absolutely no grounds for supposing there was any compression of the cord.

Here, it might not be out of place to say that the Montreal Medical Journal has been misinformed in regard to the absence of X-Ray machines in Sherbrooke. Dr. Williams has in his office a large induction coil, specially constructed for X-Ray work, (Clapp & Eastman). Also a high frequency apparatus which can be used as a portable X-Ray machine and be taken to the hospital or elsewhere for such examinations. Dr. Bachand has had one for several years. There is a 20 Plate Static Machine at St. Vincent de Paul Hospital as well as a special coil for X-Ray; also a 20 Plate Machine in St. Charles Seminary, (Waite & Bartlett). Any of these can be used at any time by the Medical profession, and most of these have been in use daily, for several years.

I had the opportunity of seeing the patient again on March 8th, and found him in fairly good condition. His reflexes are still much increased, and the tremor on exertion has not quite gone. He cannot walk outside, but can get about his room fairly well. The tic is gone except upon excitement. The nystagmus is the same as before, and the thermo-anæsthesia is still present, though less marked than it was, as he is now able to distinguish between 40° F. and 120° F. in the lower part of the area previously involved. He still micturates slowly, but has no retention.

Trusting that this history may throw some light on the case, I am,

Yours truly,

MALCOLM MACKAY,

Late Clinical Assistant in Neurology, Royal Victoria Hospital.

Reviews and Notices of Books.

Aids to Microscopic Diagnosis, (Bacterial and Parasitic Diseases). By Ernest Blake Knox, B.A., M.D. Captain, Royal Army Medical Corps, Students' Aids Series, London. Baillière, Tindall & Cox, 1909.

We have no love for the ordinary cram book, but, looking through this, find that it is so thoroughly well up to date that we cannot but commend it, the only serious objection we can find with it being in the arrangement in which, taking first the blood, then pus, then nasal secretions, sputum, and septicæmias, the reader jumps from bacteria to animal parasites and spirochaetes and back to other specific bacteria in a bewildering manner. What is said under each special heading, if condensed, is in general thoroughly sound and up-to-date, even down to the methods of vaccine therapy.

A Text Book of General Bacteriology. By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago, and in Rush Medical College.

The medical student is fortunate in having at his disposal the choice of a series of four or five manuals of Bacteriology all of a high order of excellence,—so good, indeed, that as a teacher the writer of this notice often wonders whether a general course of lectures upon bacteriology in relationship to disease is not after all a work of supererogation. Each of these textbooks has merits of its own: the last comer, this work of Professor Jordan, stands out preeminently for this—that it admirably fulfils the promise of its title, and that it is a manual of General Bacteriology with particular application to the needs of the medical student.

We know of none of its competitors that affords the reader a broader view of bacteriology in its relationship to man and his surroundings, and just as we believe that he is the better grounded, and the better medical man, whose knowledge of General Pathology is well established, so do we welcome a work which affords a proper basis of general bacteriology for the study of the special bacteriology of disease. Nor is it possible to read Professor Jordan's admirably written work without recognizing on every page the bearing of the observations he brings forward upon the infectious diseases and their specific causes.

The first six chapters are devoted to the properties and classification of bacteria in general, the next two to bacteria and their relationship to disease, and to immunity. Then follow eighteen chapters upon the pathogenic bacteria by others upon the Trichomycetes, Blastomycetes, Hyphomycetes and Pathogenic Protozoa. This work concludes by five well written and illuminating chapters upon the bacteriology of milk and milk products, bacteria and the nitrogen cycle, bacteria in the arts and industries, the bacteria of the air and soil and water, and the bacterial diseases of plants, with a useful appendix on a subject too often passed over in silence, namely, upon infectious diseases of unknown causation.

The work, in short, is all that might be expected from an investigator of such wide scope in bacteriology as Professor Jordan, and we most heartily welcome it.

J. G. A.

Diseases of the Bones and Joints. Goldthwait, Painter and Osgood. D. C. Heath & Co., Boston, 1909.

This book is not, and apparently was never meant to be, a text-book of what is known as orthopædic surgery, but, rather, a text-book dealing with one group only of the afflictions included amongst those of special interest to orthopædic surgeons.

It is divided into three sections, the first treating the subject of tuberculosis of bones and joints; the second treating the non-tuberculous diseases of joints, and the third dealing with many other various lesions of bones and joints.

The first two sections are prefaced by able chapters devoted to the general consideration of the diseases discussed in these sections.

The section devoted to tuberculosis begins with a chapter describing the methods of physical examination in disease of a joint. This will be of great service to both students and others.

Following this chapter are several devoted to tuberculosis of the different joints. That devoted to the consideration of Potts' Disease is

of particular interest. Great thought is expressed on the general treatment of this affection, the importance of which seems to be fully appreciated by the authors. The principle of hyper-extension is brought prominently before the reader as not separating the diseased surfaces of the bodies but changing the centre of gravity and thus protecting diseased parts and permitting greater expansion of the lungs, and, consequently, general improvement in the health of the patient. This suggestion, whilst containing much truth, may not contain all the truth. Hyper-extension tends to separate vertebræ as well as tending to change the centre of gravity. Separation lessens attrition; it gives rest. Rest is the generally recognized treatment of tuberculosis.

A section has been devoted to illustrative cases.

These have been chosen wisely and illustrate the facts not generally recognized that lordosis may be the sole deformity of Potts' disease; that Potts' may be secondary to diseased glands, and further agrees in the theory believed in amongst us that lordosis with muscular spasm may be symptomatic of diseased glands. One case is of particular interest, viz., that of a man, suffering from paraplegia, who was under observation for three years, and whose death was followed by an autopsy with a special examination of the spinal cord. In this case the canal was definitely constricted opposite the 11th dorsal vertebræ and the cord deformed through bony constriction. This is of great interest, but must be most rare, because over 25 specimens of spinal columns affected with Potts' disease were examined recently and the majority of these were vertebral columns most severely affected, and yet not one case was found in which the cord was compressed by bone. In fact, it is generally conceded that when the symptoms of compression exist such may be attributed to a pachy-meningitis in the majority of cases, and that in others œdema may give rise to a tonic cause which may produce a destructive inflammation.

In discussing the subject of tuberculosis of the hip it is stated that in children, in the majority of instances, symptoms are referred to the knee-joint. This is not the experience in the clinics of the reviewer. It is rather the exception to have symptoms complained of as being or having been referred to the latter joint. For treatment, the authors have declared their adoption of the policy of the English and the Continental schools which do not favour traction but rather fixation.

Plaster is strongly advocated; great stress being laid on the position in which the extremity is held. Little or nothing is said of forms of treatment, other than that by plaster, and yet it is qestionable if those who still use the time-honoured methods of Thomas do not secure just as good results as those obtained by the advocates of plaster.

In critically examining the article devoted to the consideration of the subject of hip disease one cannot help wondering whether sufficient consideration has been given to this affection which, of all forms of tuberculosis of the joints, has certainly shown the greatest mortality.

In the consideration of tuberculosis of the knee one is impressed with the significance of the fact that little special reference is made of Bliss' treatment. It is said, later in the article, to be "at times of distinct benefit," but surely if this form of treatment is worthy of any special consideration it is here, under the treatment for tuberculosis of the knee which joint is so easily accessible for the treatment prescribed by Bliss.

In the discussion devoted to tuberculosis of the elbow the suggestion is made that right-angled flexion is the most desirable position for treatment. This is contrary to Mr. Thomas' well known view that acute flexion should be preferred to all other positions. Certain it is that if there is any possibility of anchylosis resulting the position of acute flexion is to be preferred.

A chapter is devoted to the treatment of tuberculosis of bones and joints in sanatoria. Let me quote: "These words should be strong words for, when combined with effective mechanical protection of the joints, the results obtained seem unquestionably more favourable than those obtained by any other known method."

About a page is devoted to the use of bismuth in tuberculosis sinuses. The authors of the book being reviewed, do not seem enthusiastic about this method of treatment. Their conclusions evidently concur with ours.

The injection of iodoform is also considered, but this drug is not discussed as an aid to the cure of tuberculosis. This is a pity, as reports, perhaps only isolated reports, published during a period of at least two decades, have suggested that this may be useful as an adjunct to other treatment.

A chapter is devoted to the operative treatment of tuberculosis of the joints. It might have been better to describe the operative treatment under the treatment of each separate joint instead of publishing a brochure on operative surgery at the end of the consideration of all the tuberculous affections.

After this there is a section devoted to case reports of patients operated upon. How much better and less tedious it would have been if these reports had been used to illustrate the treatment of each lesion as it was discussed. Case reports are rarely considered interesting enough, per se, for any surgeon to spend a few hours reading them for his edification, and yet how valuable they are when used to illustrate

the description of the symptomatology, diagnosis or treatment of a disease.

The second section of this work is devoted to the Non-Tuberculous Diseases of the Joints. Its introduction speaks in no uncertain terms of the neglect that has been paid to this form of lesion, "We have denied sufferers from these diseases admission to hospitals, nominally because there were more urgent cases, but really because there were more interesting cases to be studied." We are all in accord with their creed that they are probably mostly due to an infection, and our first endeavour should be to locate the source of the infection and attempt its removal.

Messrs. Goldthwait, Painter and Osgood, are amongst the most prominent believers in the theory that both hypertrophic and atrophic arthritis are separate and complete entities. They say: "It is maintained by some observers that it is impossible to distinguish between the lesions of atrophic, hypertrophic or infectious types from pathological appearances. This is unquestionably true of the terminal lesions in some atypical cases, but it is not true of the acute case. The erosions which may be seen in some cases of the hypertropic type are mechanical erosions."

The etiology and treatment of hysterical and functional joints are considered in a most interesting way. The different means of treatment at our command are dwelt upon. "The place of mechanical supports in the treatment of functional joint troubles is often a very important one. The muscles controlling the motions of a joint, or a series of joints, like the vertebral column, are fatigued by even a slight exercise of their functions and in the extraordinary receptive state of the nervous system of these patients the response to this peripheral fatigue is a deepening of mental inertia."

Lues of bones, osteomyelitis, rickets, and the rarer forms of bone and joint disease are all carefully described.

As might be expected a most careful article on sacro-iliac affections is afforded a prominent place in this book. The chronically strained foot also receives attention.

The fifteenth chapter is devoted to subdeltoid bursitis. The work of Codman is carefully reviewed. Two cases are reported which illustrate the symptomatology and treatment of this affection.

The work is concluded by a chapter on the use of plaster of Paris in orthopædic surgery.

Considered as a whole, this text-book is a valuable contribution to the literature published on the diseases of the bones and joints, and it

should be available to all who take any special interest in this branch of surgery.

A. M. F.

THE MALARIAL FEVERS, HÆMOGLOBINURIC FEVER, AND THE BLOOD PROTOZOA OF MAN. By CHARLES F. CRAIG, M.D., &c., 1909, pp. 477. William Wood & Company, New York. Price $4.50 net.

In the preface the author states that no complete treatise in English upon the malarial fevers has been published in the last ten years, and that recent advances in the ætiology and prophylaxis of malarial disease justify the publication of the present volume. "The work is very largely the result of personal experience gained in the United States military hospitals in this country, Cuba, and the Philippines, and, as such, embodies the results of over ten years of investigation, and the study of thousands of cases of malarial fever." The addition of chapters on the other known blood protozoa of man, and on hæmoglobinuric fever, was considered advisable owing to the close relation of the latter to malarial diseases, and the importance of the former in connexion with examination of the blood, as they occur in regions in which malarial parasites abound. The chapters on the etiology of the malarial infections occupy 123 pages, and deal fully with the morphology and biology of the different species of plasmodia. In regard to classification of species the author adopts that of Blanchard, but subdivides his "plasmodium falciparum (æstivo-autumnal parasite) into "plasmodium falciparum" (tertian æstivo-autumnal parasite), and a "plasmodium falciparum quotidianum (quotidian æstivo-autumnal parasite). This is practically, after all, Schaudinn's classification, with "falciparum" suggested by Welsh as the specific name, instead of "immaculatum." The controversy concerning a proper nomenclature will probably not be ended with this latest effort. The photomicrographs illustrating the various species of plasmodia are quite good, and the plates seem better in coloring and drawing. The following chapters, dealing with the extracorporeal cycle of the plasmodium and the general ætiology of malaria, are sufficiently full and lucid. In part III, ninety-four pages, the symptomatology and clinical varieties of the malarial fevers are considered in detail, with illustrative histories and charts, chiefly of æstivo-autumnal infections, which seem to bear out the author's contention that there are a tertian and a quotidian type, corresponding to his morphological division above referred to. In the chapters on latent, masked, and recurrent malarial fevers, the subject of "intracorpuscular conjugation" is described and its relation to

latency and recurrence discussed. Sections on sequence, complications and prognosis follow, in Part IV. Diagnosis, prophylaxis and treatment occupy Part V, eighty pages. The examination of stained preparations of the blood is emphasized as the most reliable means of diagnosis, and adequate directions are given for this as well as for the examination of malarial mosquitoes. The chapters on prophylaxis and treatment contain in a clear form the latest experience on these important topics. Part VI deals briefly with hæmoglobinuric fever, and Part VIII consists of short chapters on the Leishman-Donovan Bodies, Trypanosoma Gambiense, Spirochætes, and Histoplasma Capsulatum. A commendable feature is the insertion, at the end of sections or chapters, of a selected bibliography referring to the topics considered. The volume can be recommended as a good guide to the study of the malarial infections.

Medical News.

OTTAWA MEDICO-CHIRURGICAL SOCIETY.

The regular meeting of the Ottawa Medico-Chirurgical Society was held at the Carnegie Library on Friday, the 18th of February. Dr. Charles E. Preston presented a paper upon the Surgical Treatment of Infantile Paralysis, and Dr. J. O'Brien a report of a case of extensive stellate fractures of both patellæ. Dr. Thomas Gibson reported a case of lymphatic leukæmia, and Dr. W. A. Graham one of aphonia in a child. Dr. Lyman showed pathological specimens of pulmonary infarct and endocarditis with microscopic sections.

THE CANADIAN HOSPITAL ASSOCIATION.

The Fourth Annual Meeting of the Canadian Hospital Association will be held in Montreal on Easter Monday and the following Tuesday, March 28th and 29th.

Dr. Christian Holmes, of Cincinnati, and other eminent hospital workers will be present.

One feature of the meeting will be a visit to the various Montreal Hospitals, with demonstrations on some special feature of their work.

All Hospital Superintendents and Hospital Trustees are eligible for active membership, and anyone else particularly interested in hospital work is eligible for associate membership.

For further information in regard to the meeting application may be made to the Secretary, Dr. Brown, Toronto General Hospital, Toronto, Ont.

Copies of last year's proceedings can be had from him on application.

Retrospect of Current Literature.

ORTHOPÆDICS.

UNDER THE CHARGE OF DRS. FORBES AND TURNER.

NICHOLS AND RICHARDSON, Boston. *Journal of Medical Research*, September, 1909.

The paper is based upon a pathological and clinical study of sixty-five cases of chronic, nontubercular, deforming arthritis, illustrated with numerous plates and microphotographs. In twenty-six cases there were complete autopsies, in one case a partial autopsy, and thirty-eight were from amputations and excisions. Material was collected from the Boston City Hospital,—private material and a few dissecting-room subjects. Observations have been carried on eight years. The preliminary report was published in the "Boston Medical and Surgical Journal," March 9th, 1905. As a preliminary note they state that they studied the actual lesions on the joints and in their detailed report cite clinical cases: the etiology has had to be casual. Certain types were first described by Heberden. Since then there has been much confusion from various clinical manifestations and the obscure etiology. X-ray work, while adding to knowledge, did not materially help the present confused classification.

Pathological Types.—The studies have divided these cases into two pathological groups.

I. Those which arise from primary proliferative changes in the joints, chiefly in the synovial membrane and in the perichondrium.

II. Those which arise primarily as a degeneration of the joint cartilage.

The groups correspond closely to the clinical groups of an article of four years ago. The two groups are characterized by distinct gross and pathological differences. The writers emphasize that these two pathological types do not correspond to two definite etiological factors, i.e., to two definite and distinct diseases.

The tissues which enter into joint structure are bone, articular cartilage, synovial membrane, capsule and ligaments. They are all of mesoblastic origin though differentiated into tissues of very different histological structure. The cells of these tissues may proliferate if stimulated by any one of various irritants or may degenerate from the effect of any one of various agents. Yet the actual cell and tissue changes which occur are limited in number, although the gross appearances vary with the special tissue which proliferates or degenerates. Hence the same end result may be produced in these joints by a variety of irritants or agents and a given agent or irritant may produce a variety of gross appearances.

The writers believe the original lesions arise either in the synovial membrane or in the cartilage. Different causes may bring about this primary change in one or other of these structures. Traumatism, acute suppurative infections, gonorrhœa, syphilis, probably faulty metabolism and probably also a variety of other causes may induce primary proliferation of the synovial membrane, while old age, traumatism, dislocations, pressure of tumours of bone, gout, diseases of the central nervous system and other causes lead to primary degeneration of the cartilage. From whatever origin, the process, once started, tends to continue. The primary cause may produce partial destruction of the joint, partial destruction may cause continued injury and thus a vicious circle is continued; or, on the other hand, the primary cause may continue to act indefinitely. Hence, as the disease is a progressive one, the joints of each type may present a great variety of gross appearances and symptoms depending upon the extent of the lesion, upon its duration and upon various incidental factors. Briefly stated, a given cause in either of the two pathological types may produce a considerable variety of different appearances, while a number of different causes may lead to the same end result in either type. Moreover, in these chronic joint lesions examination of the gross or histological changes in the joint may fail to determine which one of a number of possible causes was the active cause in the specific case; and on the other hand, a known active cause may produce any one of a variety of gross appearances in a given joint.

Normal Joint Structure.—The epiphyseal ends of two bones covered with cartilage lie in apposition. Below the articular cartilage is the marrow canal of the epiphysis with trabeculæ and marrow. The two articular ends are enclosed in a dense capsule (fibrous) lined by the specialized cells of the synovial membrane. The surface of the cartilage is covered with perichondrium. The marrow spaces are quite vascular. The trabeculæ show lamination from successive deposits of calcified bone, and the bone corpuscles are in the spaces between. Occasional bone giant cells are seen.

Cartilage Arrangement.—Two-fifths of the way towards the joint is hyaline with isolated cells in irregular nests, and as one goes deeper there are more cells. Beneath this zone is the hypertrophied cartilage zone. The cells are much increased in size and arrange themselves in columns at right angles to the joint surface and epiphyseal line. Beneath this zone is the transition line from cartilage into bone, which is at times called the zone of provisional calcification.

Proliferative Calcification.—In this type the primary change occurs as a proliferation of the synovial membrane and of the peri-

chondrium of the articular cavity, combined in many cases with a synchronous proliferation of the connective tissue and endosteum of the epiphyseal marrow directly below the joint cartilage. The most marked change is usually in the synovial membrane, while the extent to which the perichondrium proliferates is variable. In some joints it is very slight and almost negligible, in others it is very marked. As a result of this proliferation two sorts of changes occur. From the synovial side a layer of granulation tissue is produced, which sooner or later spreads over the joint cartilage as a thin pannus layer. Where this comes in contact with cartilage it usually produces a destruction and absorption of cartilage. On the other hand, when the proliferation of the perichondrium takes place a layer of specialized connective tissue is formed which readily transforms itself into cartilage or bone. Thus two processes are acting,—a destruction of the cartilage by the synovial pannus and a new formation of cartilage or bone from perichondrial proliferation. The relative amount in each may be variable, but the important fact is that they may go on simultaneously.

In addition, analogous changes may take place with the marrow of the epiphysis itself. There may be a proliferation of the connective tissue of the marrow spaces of the epiphysis just below the zone of provisional calcification. This is accompanied by the formation of numerous blood vessels. This vascular granulation tissue may extend upwards towards the joint through the zone of provisional calcification and thus destroy the overlying cartilage. Thus two processes may destroy the cartilage: from the pannus layer of the synovia, and from the action of the granulation tissue of the marrow. Usually there is proliferation of the endosteum of the epiphysis which causes new bone or cartilage along the epiphyseal margin of the articular surface.

Etiology.—Observations noted in end results of suppurating joints, gonorrhœal joints, Still's disease, in some mucous membrane of polyarticular cases, in syphilitic joints with gumma adjacent to the joint, in fractures in the joint. In no instance, except truly suppurating joints and in some gonorrhœal joints, have we recovered micro-organisms. In the vast majority of these joints there is no acute suppuration. Clinically they progress with remissions. The tissue changes are those of chronic irritation. The writers believe that the lesions are not bacterial in origin but due to some soluble irritant selective in character. Faulty metabolism is adduced as a cause. They do not enter into any lengthy discussion.

General Process.—There is synovial proliferation as above described, but in some cases the cartilage is not destroyed, but fibrous

adhesions are formed. In others the amount of destruction varies, at times going through to the bone, but the layer of granulation tissue always covers it. The destruction is not uniform, but usually in the early stages is more marked at the periphery, and in all cases for a long time considerable areas of unaltered joint cartilage remain. The synovial pannus may extend over the surfaces of each bone in the joint with adhesions forming, which is most common in the large joints, or it may form a thick layer which binds together adjacent bones in the joint. In the first pretty free movement is practised; in the second a diminution of mobility is found. Occasionally the joint cavity is divided into loculi by adhesions. At times there is marked destruction of cartilage from its epiphyseal surface.

The pannus ingrowth is a more marked feature than the epiphyseal granulation. Occasionally they go hand in hand.

Proliferation of the perichondrium causes fibrosis, new cartilage formation or bone. In the subjacent marrow spaces new trabeculæ are formed beneath the destroyed cartilage but later may extend up in the cartilage accompanying the ingrowth of granulation tissue. Thus two osteogenetic layers may unite, so that there are two layers of granulation tissue,—one from the synovia and one from the marrow. Accompanying these there are two layers producing new cartilage or bone, perichondrium and endosteum of epiphysis; and all four of these may proliferate together. When the original cartilage has been destroyed this can lead to fibrous or bony ankylosis. The cartilage as a result of the process becomes pitted and eroded and may extend right through to the bone.

Changes in the Bones.—To the X-ray there is early an increased permeability, but writers conclude that this is more from calcium salts resorption than from osteoclasis. In the radiograph also bone formation at the periphery is rare; when it does occur it is usually in the form of a spur extending into a ligament.

Capsule.—Infiltration and thickening is the early result which later may proceed to dense fibrosis. The development of synovial tags is frequent, but the formation of "joint mice" is not frequent in this form as compared with the degenerative. When luxation occurs it is usually accompanied by tendency to ankylosis and not due to the formation of peripheral bone.

Degenerative Arthritis.—The earliest and primary change is a degeneration of the hyaline cartilage of the articular surfaces. It early becomes eroded and the underlying bone becomes exposed, so that cartilage atrophy involves the whole articular area. Where erosion of bone or cartilage takes place there is always an increased growth of cartilage or bone in the opposite facet. Joint motion

continues and causes in many cases eburnation. Sub-luxations occur and come on gradually, but when fixation occurs it is due to locking of the irregular bony surfaces of the articulation. No true ankylosis occurs. There is an increase in the activity of the perichondrium at the periphery of the joint. Nodes are formed and the joint cavity may be partially filled up. The capsule as a rule shows no great increase of thickness, except in certain cases associated with organic disease of the central nervous system. In these last the destruction is comparatively rapid and the capsules may be enormously thickened. Synovia is thickened especially in the peripheral folds and papillary masses may form, which when set free cause "joint mice". This explains ostrophytic production.

Fibrillation of the cartilage is the early stage. More rarely the degeneration is due to the deposition of uric acid crystals. When this occurs the fibrillation is irregular. There is no need to repeat the description of these joints. In the epiphysis the trabeculæ become markedly thickened as soon as the erosion has occurred at any point. There is a reaction in the connective tissue and the osteoblasts, so that the marrow cells become filled with spindle cells of œdematous connective tissue. Osteoid tissue develops and the end of the bone becomes dense and solid. They then describe the bone condition which is well known to all.

Perichondrial New Bone.—At the periphery of joint cartilage new bone is formed through cartilage. At first this new bone is covered by cartilage irregular in character. The entire peripheral mass becomes bony and then the cartilage gradually disappears and a spur or ostrophyte is the result.

Capsule.—This has been already described, except that frequently fibrocartilage, cartilage or bone may appear, often of large size. At first they lie beneath the synovia or away from the joint. At times they exist as nodular masses in the joint,—"joint mice".

The authors go fully into the histological changes in the synovial membrane, showing how the deformities differ from the proliferative type.

The paper is of value from the mass of material examined combined with clinical histories. The causation remains as before in obscurity.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The sixth regular meeting of the Society was held Friday evening, December 17th, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: PARTIAL GASTRECTOMY AND PYLORECTOMY, TWO CASES

A. E. Garrow, M.D., read the report of these cases, and Dr. C. B. Keenan presented the specimens.

A. Lapthorn Smith, M.D.—It is interesting to note that a few years ago one would have been severely criticised had operation been suggested in these cases. The view now is to operate and relieve the symptoms and not to consider the pathological findings. As far as the indication for the operation is concerned I believe that before many years it will be the recognised form of treatment for obstruction of the pylorus from ulceration to do this same operation, because, if there were no ulceration in the stomach, I am sure there would be no cancer.

LIVING CASE: OLD DISLOCATION OF THE SHOULDER.

A. R. Pennoyer, M.D.—I show this case firstly because it is one of the less common conditions with which we meet, and secondly from its medico-legal interest since more than one of our number have had legal complications arising from such cases. The patient, Mrs. C., is 56 years of age, was admitted to the General Hospital under Dr. Shephard's service on the 29th of June with a history that some six weeks previously she had fallen down stairs and in attempting to save her, her husband grasped her by the arm, and in that way inflicted this injury to her shoulder, and it was thought to be a strain. On examination it presented a classical picture of a dislocation of the shoulder, apparently a subglenoid dislocation. The arm was fixed in abduction; there was hardly any movement; she could not raise her hand to her mouth or do any household task; in other words her arm was practically useless. An X-Ray picture was taken and the findings showed fairly well the subglenoid dislocation and in addition a fracture through the great tuberosity. Profiting by the experience of others I did not attempt any violent reduction and on the 22nd of July operated on the shoulder. I made an incision from about one inch from the outer end of the clavicle down the arm to just below the insertion of the deltoid and having exposed this muscle cut through its anterior fibres and reflecting the muscle flaps, lay bare the former position of the joint showing the laceration of the capsule. With every assistance and every effort, I attempted to reduce it but could not move it at all from this situation. I cut through the

short head of the biceps and coraco-brachialis and in that way exposed the head in the subglenoid position very firmly fixed. Even then I was unable with very forcible extension and manipulation to bring that head out, it seemed to be held by firm adhesions and by the subcapularis. I chiselled off the small tuberosity and in that way was able to bring the head of the bone into position. I then fixed the small tuberosity with its attached subscapularis in place, sutured the ends of the coraco-brachialis and biceps and brought together the deltoid and closed the wound. The patient has now almost full use of her arm; there is still a little limitation in abduction. She went away from the hospital two weeks after the operation and I lost sight of her until two weeks ago. Since then I have been using passive movements and the limitation is lessening. It seemed best at the time to remove the fragment of the greater tuberosity, which I did; it did not apparently carry with it the insertion of the supra-infra spinous muscle so that she has still the use of them.

F. J. Shepherd, M.D.—One point is of interest here, the fact of fracture occurring in connexion with dislocation. Formerly, before the X-Rays and the opening of the joints, we did not think there were so many fractures in connexion with dislocations as now has been proved to be the case. I collected a good many years ago a number of humeri where there was an apparent slipping of the great tuberosity and they were no doubt due or produced by dislocation. I have seen several cases where I had to cut down on the head of the bone and even then found I could not reduce it and so had to resect it to get a useful arm. I think Dr. Pennoyer is to be congratulated on the result of his case. Of course the operation was a very serious one and one in which he expected to get better results, but with the fracture and the subsequent adhesions the procedure was much more difficult than was anticipated; but altogether the result is very good.

James Bell, M.D.—I have been surprised in several of the cases I have operated on at the difficulty in replacing the bone after it has been fully exposed and it has led me to marvel at the courage of the older surgeons who used pulleys and other heroic devices to pull and jerk the bone into position and without an incision. In any case the lesson is that now-a-days one should not with such positive diagnostic means as the X-Rays, go on in these old dislocations to extreme measures without an open dissection.

W. Grant Stewart, M.D.—I saw a rather interesting case this summer in the Royal Infirmary at Aberdeen, a dislocation of the hip joint and the surgeon trying to put it in place fractured the head of the bone. The history was that it was supposed to have been out for a month or

two, but afterwards he came to the conclusion that probably it was likely congenital and he simply tried to repair the fracture.

ACTINOMYCOSIS OF THE ASCENDING COLON.

J. Alex. Hutchison, M.D., and S. B. Wolbach, M.D.

S. B. Wolbach, M.D.—Up to within a few years ago, or until Wright, of Boston, wrote his paper in 1905, it was supposed that pathogenic actinomycetes grew upon various kinds of grain, particularly rye. That has been fairly well disproved and it is now believed that the organism of actinomycosis is a normal inhabitant of the mouth cavity and possibly the intestinal tract. This is fairly well established by the fact that the organisms of actinomycosis from cattle and from man are identical and that the organism will not grow at room temperature and is fairly exacting in its requirements in the way of media. This case is interesting because the two pathological specimens that came from the earlier operations Dr. Hutchison referred to, show no indication of the process. Of course the pathology of actinomycosis is simply that of granulation tissue with abscesses and it is impossible to make a diagnosis in many cases unless the colonies are found in the tissues. After finding the colonies or little granules in the pus I immediately referred to the other (earlier) specimen and was again unable to find any indication of the disease. A few statistics that I have gathered might be of interest. Of 357 cases in man, between the ages of 5 and 9 years there were seven cases diagnosed; between 10 and 19 years, forty-four cases, between 20 and 29 years, 118 cases; between 30 and 39 years, 78 cases; between 40 and 49 years, 54 cases, and above 50, 56 cases. Sex and occupation had apparently little to do. In Wright's series of 14 cases occurring in man, eight occurred in the jaw, two in the thorax, one in the abdomen and three on other parts of the body. The routes of entrance seem to be the nose, the mouth, the respiratory tract, the intestinal tract, and finally, the skin through wounds and abrasions. In a small percentage of cases the source of infection could not be traced. Of those cases in the abdomen 50 per cent. and over start in the region of the appendix, so a case such as this where the only origin found was in the colon considerably above the appendix is rather rare. Regarding distribution, all countries seem to have it. It is interesting to find that on this Continent actinomycosis is most common in Canada and one set of statistics shows that about 2 per cent. of the slaughtered cattle show actinomycosis. In the other portions of the continent the general average is 2/10ths of 1 per cent. It is particularly prevalent in Russia. It is found in man, cattle, horse, swine, sheep, deer and even the elephant, The lesion, pathologically, is usually classified among the granulomata, but is more

properly a slow suppurating process with extensive granulation tissue formation. The colonies are always found in small collections of pus. It is questionable whether many cases are cases of pure infection with the actinomyces. That is, the experience in the laboratory shows that the material is almost invariably infected with pathogenic bacteria and that makes cultures very difficult to obtain, The diagnosis is extremely simple when pus is obtained containing the granules; the larger granules are quite visible to the naked eye.

JAMES BELL, M.D.—I have had a rather exceptional experience with this condition. Three or four years ago I presented a series of cases here; as far as I remember, I think there were 12 cases at that time and I have had more than as many more since. Four cases apparently originated in the appendix and there were two other abdominal cases which could not be traced to the appendix. One showed a history which would point to migration from the intestines and the first signs produced were signs of psoas infiltration. The man was supposed to be suffering from spinal tuberculosis. Another similar case of abdominal actinomycosis was fairly certain not to have originated in the appendix; four others clearly did and in three of these I removed the appendix. I did not think of the diagnosis at the time and shelled out the appendix from the infiltrated tissue. The objective signs were a sausage-like mass in the region of the appendix without any active symptoms and unsuspectingly I removed the appendix and infiltration went on from the tissue I left behind until radical operation was an impossibility. In one case a seed-like body was found in the appendix; at the time it was not carefully examined and I laid some stress on the fact that this man was a grain dealer. No other foreign bodies of any significance were found in the appendices which I removed. I regret Dr. Hutchison did not give the previous history of this case, he merely stated that she came into hospital with an acute gangrenous appendix. In one of my cases there was an acute condition of the neck where the man had a barley beard stick in his tonsil while threshing. I was surprised to hear Dr. Wolbach say that the theory of the infection from grains and the spores of the fungus which develop upon them is now becoming an obsolete theory! I thought there were a great many facts in favour of this theory. For example, I am told that it is very common in young cattle whose gums are tender and are injured from eating hard food. The greatest frequency in the human subject is in connexion with the mouth and the jaws. Another fact is that when originating in the appendix in this quiescent way it would look as if something carrying the infection, had entered and remained there. The cases I have seen have been entirely different from ordinary ap-

pendicitis. With regard to the results in these cases: Dr. Hutchison speaks of the result some months hence—my experience is that advanced visceral actinomycosis is an absolutely fatal disease and I gather that that has been the almost universal experience of surgeons. I would like to know if Dr. Hutchison is doing anything in the way of medication.

J. G. Adami, M.D.—I confess to a feeling with Dr. Bell that I am rather sorry to give up the old idea that actinomycosis is not associated with grain and that it is by wounds in the mouth, of lower portions of the intestinal tract whereby portions of infected grain get imbedded in the tissue. My experience here in Canada is that we get these cases from agricultural communities and not among city dwellers; the same has been experienced in Russia and Germany. Wright's theory is that to get pure development one must have anaërobic cultures. In my first experiments, in 1891, I was able to grow the fungus quite readily in deep tubes so long as they were present with pyogenic cocci. But the more I tried to get the ray fungus pure and isolate it, the greater my failure to obtain growth, with purification the organism died out. It deserves note that prior to Wright the anaërobic nature of actinomyces had been demonstrated by Wolff. I feel that more evidence as to the mode of infection is required and here in Canada with the large number of cases occurring in the rural districts it should be easy to follow this to a conclusion. Where a chronic suppurating condition is present, which is intractable we must look for these organisms. There is much about their characters and regarding the disease they induce that wants settling.

C. B. Keenan, M.D.—This case is interesting and illustrates very well some facts concerning actinomycotic infections. Actinomycosis travels and travels widely leaving no trace in the place whence it started, as shown in one case from Dr. Bell's clinic where a patient was operated on for actinomycosis of the appendix and surrounding this was a mass of granulation tissue and pus specimens of which showed general actinomycosis. The patient recovered, wound having healed, but returned to the hospital with a condition simulating liver or lung abscess. The peritoneal cavity was opened and it was found to be free from any trace of disease and later the lung was explored, when a large actinomycotic abscess was found. Again, a patient had clinical signs of an abscess in the upper part of the abdomen which slowly disappeared only to reappear later in the groin, the abdominal cavity being now apparently free.

In regard to the view that actinomycosis is normally present in the mouth and in the intestinal tract I think that its frequent development in wounds in cattle would indicate otherwise. I used to think with Prof. Adami that actinomycosis was a rural disease, but I have had

lately four cases of this infection that apparently developed in the city of Montreal.

Actinomycosis is a much more common disease than is usually considered.

S. B. Wolbach, M.D.—I agree with practically everything that has been said this evening, particularly about the fatality of the disease where most of the cases wind up with generalized metastases in the lungs and the brain. Dr. Keenan's statement regarding castrated cattle was known by me, but I do not see that it argues against Dr. Wright's belief that the microorganism multiplies only in the intestinal tract. Of course Bostwem did find in his serial sections foreign bodies and these consisted of husks of grain and he cultivated from these husks an actinomyces, but I think that Wright has shown that this was not the organism which produced the disease in man. Wright makes the statement that pathogenic actinomycetes will not grow at room temperature and in the presence of oxygen and that they do not produce spores. But assuming that they grow only in the intestinal tract; that would give, of course, with the discharge of dung a very wide distribution of actinomycetes in rural districts. I think the most probable hypothesis in Dr. Hutchison's case, is that the acute appendicitis may have furnished a portal of entry for the organism. It seems to be necessary to have some definite injury for the actinomyces to take hold. In cattle, injuries about the mouth are common and I believe the same holds true in man.

THE PLACE OF BRACES IN THE TREATMENT OF WEAK PRONATED AND FLAT FEET, WITH ESPECIAL REFERENCE TO A SIMPLE METHOD FOR THE PREPARATION OF THE PLASTER CAST ON WHICH THEY ARE FASHIONED.

A. Mackenzie Forbes, M.D.

Dr. Forbes illustrated this report with cases and material used in the preparation of the casts.

REPORT ON THE METHOD OF SPINAL ANÆSTHESIA AS DEMONSTRATED IN NEW YORK BY PROFESSOR JONNESCO, OF BUCHAREST.

W. W. Chipman, M.D. read this report which appears in the January number of this Journal.

G. E. Armstrong, M.D.—We are all very much indebted to Dr. Chipman for this valuable, and at the same time, extremely interesting report of the clinic at Mount Sinai given by Professor Jonnesco. As Dr. Chipman says, spinal analgesia is no longer in its infancy, and, unless something new develops in technique or the selection of drugs, I think we are in a position to form a fairly judicial estimate and to give an opinion that can hardly be called premature or ill-founded.

I have been much interested in spinal analgesia and have seen a good deal of it in Paris, principally with Professor Tuffier, and with Professor Barker in the University College Hospital, London. In many cases, in fact, in nearly all cases, spinal analgesia given in the lower lumbar region, between the third and fourth vertebrae, as practised by Barker and Tuffier, is satisfactory as far as the analgesia goes. Barker has published three series of 100 cases each, 300 in all. He is now beginning his fourth series of 100 cases. In his first 300 cases there were no deaths attributable to the spinal analgesia, but he had to resort to general anæsthesia in 23 out of the 300 cases. Barker is extremely fair and impartial in the statement of his results and experience with spinal analgesia. When he reported his last 100 cases he went on to say that although there had been no deaths in his first 300 cases, yet, since he began his fourth series of 100, there had occurred two cases in which the spinal analgesia might be thought to have contributed to the death of the patient.

Dr. Chipman speaks favourably of the isotonic solution. That is a very important point. The isotonic solution naturally is more diffusable in the cerebro-spinal fluid and in that way might be expected to extend its influence over a larger section of the cord. It is, however, less controllable than the heavier solutions that would follow more nearly the laws of gravity. Barker's solution is heavier than the cerebro-spinal fluid, Chaput's solution is still heavier, and it can be demonstrated by the use of artificial tubes and coloured solutions that these heavier solutions are more controllable than the isotonic solutions, that is to say, they tend to remain in that part of the spinal canal where they are first placed, but by elevating the pelvis the solution may be made to ascend to a higher level and gain a higher level of analgesia. This can safely be extended to the lower border of the ribs; or by turning the patient on one side the nerves going to the right or left leg, as the case may be, may be influenced much more than those on the other side.

The only exception that I would take to Dr. Chipman's paper is when he says that lumbar anæsthesia is safe. Köhler reported at the last German Surgical Congress that he had collected 7784 cases of spinal analgesia with 12 deaths, or 1 in 648 cases. Now I do not think any anæsthetic can be called safe that is followed by that large percentage of mortality.

There is also the danger of permanent paraplegia. I am informed that there are three such cases in San Francisco, one in Brooklyn and one in London, England. In these cases the paraplegia is apparently permanent. Recently I had a fear that such a case would have to be reported from Montreal. A life saving operation was necessary for the

relief of a large collection of pus in the abdomen in a person with a sp. gr. of 1006, whose urine was full of casts, a woman who had suffered from puerperal convulsions on two occasions. The four physicians and surgeons who were interested in the case, after a careful consideration of all the conditions present, decided that spinal analgesia, in this case, would be accompanied by less danger than general anæsthesia. The needle was passed between the 3rd, and 4th lumbar vertebræ, the cerebro-spinal fluid flowed out freely, without a tinge of blood, and the stovaine was inserted. It was a complete failure and a general anæsthetic was resorted to in the end, ether being used. A condition of paraplegia followed which persisted long enough to cause a good deal of anxiety, but it is, fortunately, now passing rapidly away.

In the British Medical Journal for November 13, there is an interesting article of Jennesco's on spinal analgesia. Jennesco reports that in his 1015 cases he has never known any failure, and has never had to resort to ether to finish the operation.

In the ensuing number of the same journal there is a report of a man who was present at Jennesco's clinic at Woolwich, and the reporter states that Jennesco was successful in one case, partially successful in the next case, and, in the third case the spinal analgesia was a complete failure.

Now while I do not think that it can be said that spinal analgesia is as safe as general anæsthesia by any means, and certainly not as safe as local anæsthesia, yet there are certain conditions in which spinal analgesia may possess comparative safety. That is, it may under special circumstances be less dangerous than general anæsthesia. I assume that in these cases local anæsthesia is out of the question. Such cases, for instance, as a condition of fæcal vomiting. There is always a danger of aspiration pneumonia in such cases, and a pneumonia due to aspiration of intestinal contents is always dangerous. Again, in cases of marked renal insufficiency with a low sp.gr. of the urine, and a correspondingly high sp.gr. of the blood the administration of a general anæsthetic is highly dangerous.

Wesley Mills, M.D.—I hope in a few weeks to lay before the Society some considerations based on my experience of last year, especially on the subject of anæsthesia and pain and I hope the surgeons will come to hear what I have to say. If I were a surgeon I should make it one of my great ambitions in life to lessen the amount of pain that is now inflicted, I venture to say by every surgeon. One of the great advantages of going through such a variety of experience is to help him understand many things which were incomprehensible before. I think it is probable that if Professor Jonessco had had even a quarter of the painful experience I had last year, he would never have inflicted such torture

as that just described, I believe I have felt for that young man with the mastitis as probably no other member present could do unless he has had similar experience to his or mine.

C. K. P. Henry, M.D.—During Dr. Elder's service last Spring a good many cases were injected by Dr. Bazin all in the lower lumbar region, a 5.% solution of Stovaine being used. The cases covered a wide range, one case for removal of fragments of a fractured tibia and the plating of the bones with the necessary sawing off of the ends and insertion of the screws and plates. I think in this series two cases had to have a general anæsthetic. In one, though the fluid flowed very freely on the introduction of the needle which went in very easily, the fluid injected apparently went into the subarachnoid or arachnoid space, but still no anæsthesia was produced, and considering the case afterwards we decided that the needle had probably just passed into the sac and a slight movement displaced the eye outwards again. We did not resort to a second injection, but gave him an anæsthetic. In another case, an elderly man, the spines were clubbed, there was a good deal of rigidity and it was impossible to get the proper bowing, and to get into the spinal canal at all. The man who had the operation on his tibia and plates inserted, was a case which had been brought in with D.Ts., and in fact, was an inmate of Verdun, and for several reasons it was impossible to give him an anæsthetic. Internal and external urethrotomy were performed. The results in rectal work and the surgery in the lower regions was very satisfactory. I do not think in any of the cases there was headache, nor did paralysis last over two hours.

W. W. Chipman, M.D.—I merely wish to thank the Society for the discussion because after all, this discussion gives to us the clinical experiences of spinal anæsthesia in the City of Montreal. With regard to the question raised by Dr. Garrow the feeling in New York seemed to be that in these cases of paralysis the needle had entered directly one of the nerves of the cauda equina, and the paralysis was the result. I do not think the introduction of the solution into the sub-arachnoid space at this level would ever cause such a lasting paralysis. The contention is, that it is only when the drug is injected directly into the tissue of the cord or its lumbar roots, that permanent paralysis, as a result of tissue necrosis, is produced.

The seventh regular meeting of the Society was held Friday evening January 7th, 1910, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: THREE LIVING CASES ILLUSTRATING EDINGER'S "ERSATZ THEORY OF TABES DORSALIS."

C. K. Russel, M.D.

D. A. Shirres, M.D.—Fourteen years ago, when working with

Ferrier, I remember very clearly one case, a cavalryman, who developed eye symptoms and a peculiar condition of his arms which was diagnosed as probably muscular dystrophy. On going into the history, however, and ascertaining his occupation and that in the care of his horses he was required to handle large bales of hay and straw every day, Dr. Ferrier came to the conclusion that it was one of the cases of tabes dorsalis. Dr. James Stewart exhibited two cases here of the same condition of cervical tabes, both were shoemakers, one of which returned to our clinic a few weeks ago, and he was in the same condition as seven years ago except that the atrophy had progressed somewhat. It is interesting, as Dr. Russel points out, that these cases occur most frequently in men from continued strain on one set of muscles.

W. F. Hamilton, M.D.—I understood Dr. Russel to say that the exposure to the glare of the sun on the snow in one of his cases was sufficient to cause the optic atrophy. In this connexion I am reminded of the artic explorers who complain bitterly of snow blindness, which affects them so seriously in their marches that narcotics have to be resorted to for relief. Those who experience this affection say that it is not the glare of the sun on the snow that induces it for on cloudy or misty days they suffered most, when there is no shadow.

C. K. Russel, M.D.—In answer to Dr. Shirres I have already stated that Edinger published this series of articles in 1894-5, so that it is by no means recent, but I think it has escaped notice. With regard to the so-called snow blindness, when I was up north in the Hudson Bay district some years ago two of us had a slight touch of this snow blindness, and it certainly rendered vision painful and difficult, in any case I think it would be sufficient to cause fatigue of those optic nerves and induce neuritic atrophy in a patient who has had the syphilitic toxine.

DEMONSTRATION OF A NEW HUMAN TRYPANOSOME.

J. L. Todd, M.D.

DEMONSTRATION OF APPARATUS FOR THE ADMINISTRATION OF RECTAL ANÆSTHESIA.

E. M. von Eberts, M.D.

J. Appleton Nutter, M.D.—While in Boston in 1906, I saw Cheever trying rectal anæsthesia at the Children's Hospital. Although in some cases the method worked well, in others it had to be supplemented by ordinary inhalation narcosis. The success obtained was not sufficient to warrant its adoption as a measure of routine at the Children's Hospital.

E. M. von Eberts, M.D.—Doctor Cunningham gave a demonstration of this apparatus a few weeks ago. The patient, an old man with thickened vessels and a chronic alcoholic, had an extensive carcinoma of the lower lip. The apparatus worked very satisfactorily and the house-

man in charge assured me that in practised hands the method had been very successful. Cunningham employs rectal anæsthesia in all operations upon the head and neck.

AN ANALYSIS OF SEVENTY-ONE CASES OF FATAL SCARLET FEVER.

John McCrae, M.B., read the paper of the evening.

H. A. Lafleur, M.D.—I would like to ask Dr. McCrae about the condition of hepatitis, which seems rather a new thing. He spoke of it as being analogous to acute yellow atrophy of the liver, I would like to ask him if these cases were at all jaundiced, and whether the liver went on to atrophy after an apparent period of enlargement.

J. R. Spier, M.D.—I must congratulate Dr. McCrae on the excellent series of cases he has presented to us to-night. I quite agree with him in all he has said in regard to the futility of any of our modern methods of treatment in our results in these cases. As regards the fulminant cases, of which he has not had very many, I have seen perhaps one or two dozen during the epidemic of 1893-95, death occurring in the 24 hours with a temperature of 108 and 109. All methods of reducing the temperature were tried, ice baths, spongings, even to bleeding, with apparently no result, the patient dying of paralysis of the respiratory centres. Dr. McCrae's picture of severe scarlet fever and the conditions of the mouth is an absolutely vivid one and in the treatment of this condition one cannot, I think, emphasize too much the usefulness of thorough cleansing. In my experience I have certainly found great benefit from the use of hydrogen peroxide, half and half, freely used to both nose and throat, and I think we got some advantage from the local application of fairly strong solutions of iron, not so strong but that it can be applied by giving it internally. That and the free use of strychnine I think comprises practically the only useful methods I have found in combating what the docter terms severe scarlet fever. I am inclined to differ with him slightly in the value of antistreptococcic serum. When I had my large series of the severe form I did not have the opportunity of using this serum, but in the few I have used it on since I think I have got considerable benefit. Once the general septicæmia has set in I cannot see that there is any hope for the patient. I quite agree also with Dr. McCrae in his statement that the wards should be thoroughly disinfected and that frequently. I have not the faintest doubt that many of our cases that are sent in as mild cases and which take on the severe form have been reinfected from the ward contagion.

Dr. Hart,—In the course of a large country practice I have been through two epidemics of scarlet fever, and I would like to give an experience which occurred to me during the last one:—The case was that of a boy, nine years of age, who got up in the morning apparently per-

fectly well, breakfasted as usual and then went to school. Came back at noon, in his usual spirits, to dinner. While at table he suddenly vomited, removed to his room and undressed by his mother, who then noticed that his body was covered by an intensely red rash. I was at once sent for and saw the boy within half an hour, and pronounced the case as one of scarlet fever, of a decided virulent type. During the afternoon, delirium, with at times a sudden sharp screech, set in. Between 6 and 7 p.m. the delirium changed in character to one of a low muttering type. At 8 o'clock I had the late Dr. F. W. Campbell in consultation, and he agreed with me that the case was a hopeless one. Towards midnight the boy became comatose, and at 3 a.m. died. Here the whole course was run in less than 15 hours. I may further state that I had no opportunity of satisfactorily examining the fauces, that the pulse could not be counted at any time, and that the temperature, taken shortly after I was called was 104.2 and at 2 a.m. was 109 degrees in the rectum.

W. F. Hamilton, M.D.—Two or three things have struck me in the reading of this paper; one is that Dr. McCrae's experience in the Alexandra Hospital bears out the teaching concerning nephritis in nearly all the text-books, namely that it is a rare thing and that it rarely has a fatal ending. In connexion with the remarks concerning the digestive disturbance does it not seem likely that this tract is infected secondarily, for the diarrhœa, etc., are expressions of a profound toxæmia? The third point was the sudden hæmorrhage. One such case I saw in a young woman admitted to the Montreal General Hospital during my service there, she died in 24 hours from violent hæmorrhage, some vessel in the throat having been eroded and a fatal termination had resulted just as in the case reported by Dr. McCrae.

A. Lapthorn Smith, M.D.—I do not think Dr. McCrae has spoken of the injection of diphtheria antitoxine in scarlet fever: I understand it is used in the Alexandra Hospital and I would like to hear if it has had any good effect. I would also like to know if he has met with many heart troubles in connexion with the endocarditis of scarlet fever? With regard to nephritis I do not remember of any case dying from it; but I know of a few who were troubled for a good many years afterwards, although none of them died. One fatal case of scarlet fever I remember was a lady in whom a black eruption came out over the body. I used to use iron and chlorate of potash and glycerine a good deal, in the old days before there was any serum. I would like to ask if carbolic vaselin has been used much at the Alexandra with a view to disinfecting the skin and preventing the disease from spreading, especially in the desquamating period. I have often prevented any one else in the family from taking the disease by using it on the patient. Dr. McCrae does

not speak very favourably of hot baths, but my impression was that the hot baths were very valuable in carrying off the diseased detritus, and also getting rid of the infection. In those days we thought that the infection was carried by the desquamating skin, so that the sooner it was disinfected and carried away by the sewer the better.

JOHN MCCRAE, M.B.—With regard to Dr. Lafleur's query about the hepatitis, I may say that this was entirely a microscopic resemblance and was very striking; the frequency with which huge focal necroses were found in the liver was startling, and where it was not focal, it was almost universal, and the fatal cases showed very frequently a liver in which the cells were so jumbled that they had lost entirely any semblance to the internal structure of the liver lobule.

Neither during the course of these cases, nor at any time subsequently have we had a case of fatal nephritis. I have often wondered in regard to the alimentary tract if there is not an actual mucosal infection of the tract. It has often seemed to me as if the suddenness with which those symptoms came on, and the high degree of decomposition in the contents of the bowel suggested it. Dr. Gardner's statement with regard to families is very true; two cases in my series belong to one family, where four were stricken and three died in one week; it is a question, however, whether it is the family or the infection. With regard to the diphtheria antitoxine, I have seen it used a great many times and the large doses certainly have a strong stimulant effect; farther than that, I have not seen any marked benefit. Heart troubles, in scarlet fever are extremely rare, considering how bad an infection it seems to be, and generally the cases get well; endocarditis is far more infrequent than myocarditis. This paper deals only with those cases that from the first are almost sure to be fatal, hence all the aspects of the disease have not been taken up.

AMOEBIC ABSCESS OF THE LIVER ORIGINATING IN MONTREAL.

F. G. FINLEY, M.D., G. E. ARMSTRONG, M.D., S. B. WOLBACH, M.D.

H. A. LAFLEUR,, M.D.—This is a perfectly typical case. The appearance of the organs at autopsy was absolutely characteristic and particularly the character of the abscessess. The contents do not resemble ordinary pus. As a matter of fact pus cells are rather rare in such necrotic material and it seems to be just the broken-down liver tissue which forms the content of the abscess. As regards the limitation of the ulcers to the cæcum and ascending colon, though not very common still we used to find this sometimes in our cases at Baltimore; it certainly is the rule that the large bowel is not so universally infected as in the Shiga dysentery. In amœbic dysentery it seems to pick out spots where there is stasis of the intestinal contents like the pouch of the cæcum. The specimen being passed around is absolutely like the diagrams of the

ulcers from Councilman's monograph, drawn from the microscopical specimens. The chief interest I think is really the fact that in this case the disease seems to have originated in Montreal and is, as Dr. Finley points out, so far a unique occurrence. We did have an amœbic abscess some 8 or 9 years ago, but it was learned that the patient had been somewhere in the Middle States before coming to Montreal.

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BY

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When I undertook to compose the paper which I have the honour of presenting for your consideration to-night, I found myself at once confronted with not inconsiderable difficulties. Where was I to begin, and where to end? The matter-of-fact person, if in captious mood, would perhaps reply, "Why not begin at the beginning?" A very brief consideration convinced me that this was as sensible a way as any other. Of all the civilizations of antiquity we know most about that of the Greeks. Their story can be traced beyond the confines of history. Their literature is venerable with age. The origin of so primitive an art as medicine may well be studied, therefore, in the record of such a people. But where to end was more difficult to decide. Before it could be settled, as a matter of fact, it was necessary to determine how I was going to deal with the task.

We might, conceivably, approach the discussion of the subject of medicine in ancient Greek times from several different directions. We might, for example, occupy ourselves with a consideration of the origin and development of medical practice. We might study the medical profession as a social force, in other words, in its relationship to the general body politic. Or, again, we might investigate the relationship of medicine to the other natural sciences. Lastly, we might take up the question of the evolution of medical knowledge. None of these aspects of the subject would be unimproving or devoid of interest, nor, in fact, is it possible to give a connected account of medicine from any one point of view without trenching considerably upon the others. But I feel, personally, that it will be at once more illuminating and more stimulating if we, in the main, confine ourselves to tracing the origin and development of medical science, that is to say, of the principles which have governed and should govern the rational application of therapeutic measures. And this, for reasons that I shall at once proceed to elucidate.

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Medicine has been termed "The Healing Art"—an art, because in the absence of stable guiding principles its successful practice depended on experience and on a sort of intuitive aptitude on the part of the practitioner. Nevertheless, it has always been the aim, at least of the master-minds of our profession, to convert this art into a science, to exchange the tallow dip of empiricism for the glorious and beneficent sun of reason. With what measure of success this has already been accomplished we are all familiar.

A learned interpreter of the doctrine of Cuvier has said, "The first question in science is always a question of method." The method of to-day, not only in medicine but in all natural and applied sciences, is the method of observation and experimentation. John Hunter touched the keynote of this when he said, "Do not think. Try it." The modern scientific spirit, then, is essentially the spirit of enquiry. Do I say modern? It is really old. For we owe this conception to the Greeks. Systems of philosophy have come and gone, many of them the offspring of the brightest intellects. If they exist at all to-day it is mainly as curious relics, illustrating merely stages in the development of human thought, but devoid of vital force. The one thing that has been permanent is the spirit of enquiry. This is the golden thread connecting the present with the past. If this be the case, and it is true of medicine as of the other natural sciences, we are the more readily enabled to translate ourselves into the intellectual atmosphere of the past. By a study of the method of medical learning, therefore, our sympathies and our interest will be best aroused and we will the better appreciate our heritage from the ages

To return, now, to the question, "How are we to bound our enquiry?"

To trace the influence of Greek thought on the science of medicine would be to write a history of medicine. To do this would be obviously impossible within the compass of a half-hour paper. On the other hand, to restrict our enquiry to the medicine of Greece itself would lead to but a partial, and indeed erroneous, conception of the subject. Greek medicine was none the less Greek because it overstepped its geographical boundaries and was transported to Asia, Egypt, or Rome. It has seemed to me, therefore, the most useful plan to deal with the evolution of medical knowledge as it is exemplified in the work of men of Greek race, of Greek education, and of Greek ideals, wherever they may have been found. From the origin of medicine to the time of its greatest perfection as a product of Greek genius is approximately a span of a thousand years. We begin with the dawn of history, for practical purposes the Trojan war; we end with the birth of Galen.

The origin of Medicine, like that of other branches of knowledge, is wrapped in obscurity. The most ancient literary monuments that have come down to us are the Books of Moses and the Homeric poems. In the former, medical subjects are touched upon in some detail and a good many useful rules of hygiene are inculcated. The suggestions for treatment, however, are of a thaumaturgic and mystical, rather than a rational, character, in keeping with what we know were the habits of thought of all primitive peoples. In Homer, we have indications that at the time of the Trojan war (about 882 B.C.) there was a very considerable knowledge of things medical, in fact, there was something approaching a definite system. Now, it is well-known that in the evolution of social and political economy things are always older than they appear to be, and, no doubt, this is the case with medicine also. Medical knowledge has always flourished in direct proportion to the degree of enlightenment of the community, and it may reasonably be inferred that it would progress equally with the arts, sciences, and other polite accomplishments of budding civilization. It is not improbable, indeed, that medicine would antedate all these, for accident and disease have been the unfortunate heritage of all races from time immemorial, and rude attempts at healing would, no doubt, be practiced in all but the most barbarous ages of mankind. The earliest therapeutics would naturally be based upon observation. A dog licking a sore would suggest the utility of washing a wound and protecting it from the air with a bland coating, such as would be afforded by the mucus of the saliva. The relief afforded by the evacuation of the stomach and bowels in certain derangements of the alimentary system would suggest the employment of artificial means to attain the same result. Observation of the effects of various plants upon the lower animals would point out the remedy here. Then, it would be found that the pain of wounds could be alleviated by rest, by the exclusion of the air and foreign substances, and by the application of heat and cold. Darts and arrows would be removed and bleeding stopped by pressure or the application of plugs and styptic agents. Broken bones would be replaced and kept in position. The observation of the course of disease and the attempts of Nature to return to a normal equilibrium would suggest other lines of treatment. The effects of certain forms of diet and the influence of external agents on the body would also early be noted. In this way a certain rough system of medical practice would arise, and, as experience grew, the skill and resources of the physician would be correspondingly increased. Yet, no doubt, the measures adopted must often have proved ineffective and even at times misdirected.

When and how medical knowledge came into being in Greece must

largely remain a matter for conjecture and inference. In the Homeric poems we find that Medicine had already something of an organization. There was a recognized medical profession; there was a definite medical practice, more especially in connection with wounds and other injuries; there was a nomenclature of disease and the parts of the body very similar to that employed by Hippocrates centuries later, all going to prove that even at this early date Medicine had a history and tradition and, in fact, was far from being in its infancy.

We have seen that among all primitive peoples certain rude ideas in regard to the treatment of disease would arise at the demand of circumstances, which would afford a starting point for a system of medical practice. The Greeks were an offshoot of the great Aryan or Indo-Germanic stock and would bring with them, no doubt, in the course of their westward march, their heritage of medical lore. How much they were indebted to the civilizations of Mesopotamia, India, Phœnicia, and Egypt, it is now impossible to say. The inclusion in the Greek pharmacopœia of remedies such as sesame, cadamom, cinnamon, and valerian, has been interpreted by some as indicating the influence of India, while the Egyptian oak and acacia, cumin, animal derivatives, and certain mineral substances, such as alum, salt, and antimony, were possibly introduced from Egypt. Tradition has it that the rudiments of the arts and sciences were brought to Greece from Egypt by Cadmus, together with the alphabet, and it is a fact that the first medical schools were established at Rhodes, Cos, Knidos, and Kyrene, places where in the course of the operations of trade and commerce the civilization of Greece would come in contact with that of Egypt and the Orient. Naturally the centres of traffic would be also the centres of wealth and intellectual life, and the places where physicians would be most apt to congregate. Nevertheless, there is no reason for supposing that the influence of outside races upon Greek medical thought was more than superficial. In fact, the well-known contempt of the Greek for the Barbarian, whose customs he despised and whose language he disdained, would militate against any close intellectual interchange. When the Greek did emerge from his aloofness to establish colonies in Asia Minor, Arabia, Egypt, and the East, it was to plant a civilization far superior to that which he found. Therefore, there is no sufficient reason for concluding that the Greeks, a race so remarkably gifted intellectually, who in the domains of art, music, poetry, philosophy, and science, have left an indelible impress on the page of human history, an influence potent for good even to-day, ever borrowed much from outside nations. They were, rather, creators, true poets and ideasmith. As they could create in one department of mental activity, they could create in another.

Whatever may be thought of the origin of Greek medicine, there can be no doubt that it quickly and immeasurably surpassed that of the other races of antiquity. And the cardinal feature of Greek medicine, the one thing which differentiates it from that of the surrounding nations, the sole principle that has proved true and lasting, the spirit of scientific enquiry, originated with the Greeks. Medicine, then, like all else, they made peculiarly their own and impressed it with their own particular genius.

The age before the siege of Troy may be termed the Prehistoric Period. We have seen reason for thinking that even at this remote time the Greeks were not entirely devoid of medical knowledge. Gradually it would come about, at a time when writing was unknown, that this knowledge would be handed from one person to another, usually members of certain families, and eventually these families would enjoy considerable repute. Later tradition pointed out certain individuals who were thought to have attained more than ordinary eminence in the practice of their profession. Melampus, a shepherd, was probably the first to distinguish himself by the extraordinary cures that he wrought.

The daughters of Prœtus, King of Argos, had taken vows of celibacy, and as a consequence, developed strange nervous manifestations with delusions. They imagined themselves transformed into cows and roamed the forests and fields instead of palatial halls. Their example proved contagious and many other women became possessed of the same monomania. Melampus, having noted the purgative effect of white hellebore, when eaten by goats, gave to the young women milk in which this plant had been steeped, thereby quickly effecting a cure. All this seems strangely familiar. History repeats itself, as some sage, lost to history, has remarked. It seems to me that not long ago I read of the theory being advanced that hysteria and neurasthenia are really manifestations of a gastrointestinal intoxication. The imitative disorders, also, to which neurotic persons are liable were well known in later times. In the Middle Ages, indeed, they assumed extreme and even grotesque forms.

Of greater renown was Chiron, the centaur, a prince of Thessaly, who appears to have flourished about the thirteenth century before Christ. He was distinguished for his preeminence in all the gentler arts of life, and his skill as a horseman probably led to the fable of his dual form. He excelled, also, in medicine and music, and it was at his feet that Asklepios, or Æsculapius, imbibed that knowledge of the art of healing which made him renowned among the ancients. This is, perhaps, the first example of the apprenticeship system in history, it may be remarked.

Asklepios appears to have been the first to devote himself to the study and practice of medicine as a distinct object of pursuit. Before his time a knowledge of medicine was regarded merely as a part of the education, though an indispensable one, of all persons of rank and condition. So far as we can gather, he was a native of Epidaurus, exposed on account of his illegitimate birth, who was found by a shepherd, and placed under the care of Chiron. He was highly successful as a practitioner, for we read that Zeus blasted him with his thunderbolts at the instance of Pluto, who viewed with alarm the diminishing number of arrivals in the nether regions. Wherefore, some wit has said, "The modern children of Æsculapius abstain from performing prodigies." So great was his reputation that he was asked by the twin brothers, Castor and Pollux, to accompany the Argonautic expedition as surgeon. After his death he attained to divine honours. It is worthy of note that in the Iliad Asklepios appears, not as a god, but as a king of Thessaly. This is in keeping with what we know of the origin of ancient myths. We need not scout these as altogether unworthy of credence, as the mere creations of a lively imagination. Carlyle has pointed out that in many cases there was a substratum of fact. An individual becomes renowned in his day for some brilliant achievement or striking peculiarity. He stands out preeminent above all others. As time goes on, his life-story becomes invested with the glamour that always enshrouds the past. His deeds are magnified and his character is exalted. The man becomes a hero, and the hero, a god. His history finally reads like a romance, tricked out with all the beautiful imaginings of poetic fancy. So with Asklepios.

At his death his mantle was divided between his two sons, Machaon and Podalirius. They appear in Homer as professional healers, and are treated with great respect. Machaon's task was to heal injuries, while Podalirius had received from his father the gift of "recognizing what was not visible to the eye, and tending what could not be healed." Here we see, even in this ancient story, an indication of the distinction between physician and surgeon. In the Homeric poems, too, it is worthy of mention, that there is no evidence of the subordination of medicine to religion, as was the case in India and Egypt, nor are the priests invested with healing functions. From incidental references in the pages of Homer and the earlier Greek writers we would infer that the practice of these personages and others of the time was principally surgical, and confined almost entirely to the treatment of wounds. Internal diseases, so-called, were usually looked upon as due to the infliction of the gods, and were to be relieved only by means of charms and incantations. In fact, the arts of magic were invoked to a large extent in surgical prac-

tice as well. The deities of Olympus, moreover, did not disdain themselves to engage in the matter of medicine. Apollo, the reputed father of Asklepios, assumed the prerogative of exciting or subduing epidemics. Apollo, also, was the cause of natural deaths among men, as was Artemis those of women. Here (Juno) was supposed to preside over accouchments. And so on.

The practice of medicine remained for a long time hereditary in the descendents of Asklepios, who were termed Asklepiades. With the development of the cult of Asklepios, which attained wide popularity not a great while after the Trojan war, temples in his honour sprang up in all parts of Greece, and the migrations of the Greeks carried his worship into Asia and Egypt. These temples were usually situated amid salubrious surroundings, in groves or near mineral springs or fountains. They were presided over by the Asklepiades who cultivated assiduously the sacred rites handed down to them from their predecessors. They prescribed venesection, purgatives, baths, frictions, emetics, and mineral waters, as indications arose. A well-regulated dietary, pure air, temperance, peaceful surroundings, and a lively faith contributed to effect wonderful cures. The worship of Asklepios naturally became very popular, and journeys were made to his temple, much, as later, devotional pilgrimages were made to sacred springs or the shrine of some saint. The familiarity which the Asklepiades thus obtained with disease, and their observation of the beneficial effects of simple remedies and external applications would gradually endow them with considerable medical skill. Moreover, the custom which prevailed of patients who were cured hanging up votive tablets in the temple, recording the nature of their disorders and the means adopted to remove them, would contribute to their efficiency. Indeed, some have thought that Hippocrates owed his knowledge of medicine largely to a study of these records. This is probably an erroneous idea, for if they were all akin to the one I now quote, they could have little scientific value: "Julian threw up blood and appeared lost without resource. The oracle ordered him to take from the altar pine seeds and eat them mingled with honey for three days. He did so and was cured. Having thanked the god he went away." Thus, in time, the priests of certain temples would acquire special celebrity. The most famous institutions of this kind were at Epidaurus, Pergamos, Kyrene, Cos, and Knidos. The two last mentioned came, in fact, in course of time, to be rivals and famous centres for the dissemination of medical knowledge.

We learn that the seekers after the cure were put through some preliminary hygienic regimen, and before consulting the oracle they were purified by ablution, sacrifice, prayer and fasting. Then, after contributing a donation to the treasury, (this was absolutely essential!)

they were wrapped in the hide of the slaughtered animal and placed to sleep at the foot of the statue of the god (incubatio or ἐγκοίμησις). The god indicated the cure usually in a dream. To impress the simple mind and to stimulate faith, the deity was often made to reveal himself in an apparition or in some other striking way. The serpent played a prominent part in these various incantations, being used in this way as a means of grace. It will readily be understood that such a system lent itself readily to the perpetration of the greatest frauds, and there can be no doubt that in later times the priests of Asklepios used their power over the minds of the vulgar for the purpose of gain and to maintain their personal ascendancy. Eventually they became utterly discredited and their system became synonymous in the popular estimation with the grossest jugglery. We see some indications of this distrust even in the time of Hippocrates, for the comic poet Aristophanes puts the following in the mouth of one of his characters: "The sacrificing priest of the temple of Asklepios, after having put out all the lights, told us to sleep, adding that if anyone heard the signal of the arrival of the god he should not stir. Consequently, we took our places on our beds without any noise. As for me, I could not find sleep, because the odour of a basin of excellent soup, which an old woman was holding near me, tantalized fearfully my sense of smell. Wishing to slip over to it, I lifted my head gently and saw the sacristan taking up the cakes and figs upon the sacred table, and, making the tour of the altars, one after the other, put into a bag whatever he found. I thought there was considerable merit in following his example, and I got up to go and ask for the basin from the old woman." The spirit of skepticism, of which we have indications here, is attributable to the influence of a new study which was now beginning to make itself felt.

It was about the sixth century before the Christian era that philosophy first made its appearance in Greece. The keener intellects began to speculate on the origin and nature of the universe and the composition of matter. The relationship of the animal body to the general cosmos not unnaturally came in for a good deal of attention, and this led in time to an enquiry into the nature and etiology of disease and the means of alleviating it. Of course it was several centuries before there was much progress in the matter of pathology, for anatomy and physiology had to be created first, but we soon see the effect upon Medicine of a more correct method of reasoning, and, if at first superstition and mysticism seemed strongly entrenched, at least a beginning was made of breaching their strongholds.

Thales, Zeno, Empedocles, and Pythagoras were prominent among

those who attempted to explain the laws of organized bodies by the laws of the universe. In their works we find the first applications of philosophy to medicine. It is unfortunate that time has left few vestiges of the productions of the early medical schools from which to judge of their scientific attainments. All that remain are the Hippocratic collection, emanating from the school of Cos, and the Knidian Sentences of the rival school of Knidos. Some have thought that certain parts of the former, notably the second and third books of Diseases, which contain references to pleuritic friction and the succession splash met with occasionally in connexion with pleural exudates, are interpolated productions of the latter. So far as we can judge, two opposing principles in philosophical medicine make their appearance even at this early age, the influence of which is apparent to-day. The one pretends to localize all maladies and sees therein only a simple organic manifestation or symptom; the other attributes maladies to a generalized disturbance of the economy, modified in the exercise of its functions. The school of Knidos represents the first of these principles; that of Cos, the second. In course of time, the Knidian theory led to the surcharging of medical science with a multitude of useless details, while the Coan hypothesis led to the gradual exaltation of theory to the detriment of observation.

It was when the bonds of priestcraft, superstition, and mysticism were being broken and the study of science was being relegated to the philosopher and scholar, that Pythagoras appears, the master whose teachings form the point of departure for the naturism of the school of Cos, the influence of whose doctrines is felt to-day.

Pythagoras was born at Samos about 582 B.C. He was an athlete or gymnast by profession and as such must have been familiar with those matters of hygiene and physical culture which were in Greece, as we know, closely identified with certain lines of medical practice. Hearing one day a disquisition on the immortality of the soul he became enamoured of the study of philosophy. Renouncing his profession, he travelled through Egypt, Phœnicia, Chaldea, and India, studying the manners and customs, the religious doctrines and practices in these countries. He returned to the Peloponnesus, but remained there only a short time, finding his way eventually to Crotona in Italy, where he made the acquaintance of the celebrated athlete Milo. There he began his reform in philosophy. His success was immediate and immense. Scholars crowded about him whom he placed under a rigorous and almost monastic discipline. It was Pythagoras who invented the theorem of the square of the hypothenuse, familiar to us in our youth, who also divided the year into 365 days and 6 hours, almost as if he suspected the movement of the

earth and other planets around the sun. His cosmogony is very curious. He conceived of the universe as a cosmos or animated whole, whose members were divine intelligences. From unity, the essence of Nature, is derived the name of the universe. Unity is the principle of everything. It is God. He represented his ideas in a concrete way by the figure one, unity, and two, denoting material things. Thus, the universe is represented by the number twelve, obtained by the juxtaposition of the figures one and two. This idea was perhaps derived from the Chaldeans, to whom we owe the signs of the zodiac. In this system, absolute unity, or God, represents the spiritual soul of the universe, the principle of existence. Between the Supreme Being and man is an uninterrupted series of intermediate beings, whose perfections decrease in proportion to their distance from the creative principle. Man alone is the bond which unites divinity with matter, which brings heaven to earth. He has a body, soul, and spirit, manifesting themselves by three distinct faculties, sensibility, consciousness, and intelligence.

When persecution had dispersed the Pythagorean society, which event took place within the lifetime of its founder, the serious practice of medicine began. His pupils introduced the practice of visiting the sick in their homes. They went from house to house, from city to city. History has designated them the peripatetic physicians. Alcmæon of Crotona, who wrote on the anatomy of animals and on physics, the great Hippocrates himself, and Empedocles of Agrigentum were the most famous of these practitioners.

It is not likely that the philosophers contributed much that was of value to the practical side of Medicine. Their supreme merit was that they introduced more exact and more correct modes of thought and so paved the way for the great revolution, the substitution of naturism for occultism, of reason for superstition. When the times are ripe for a change, there usually arises some individual to act as leader and standard bearer. In this case it was Hippocrates.

Before proceeding to the discussion of Hippocrates' work let us glance for a moment at the state of medicine in his time.

There seem to have been five or six classes of practitioners. First in time come the Asklepiades or priests of Asklepios, of whom we have already dealt sufficiently. They represent the theurgic or wonder-working school.

Next, we have the surgeons, who maintained clinics to which those who were able might repair. In their surgeries, which were often adjacent to their houses, there were facilities provided for treating what we would term minor cases, but also operating rooms and beds for the more serious disorders. Excavations have revealed a great variety of surgical instru-

ments and appliances which go to show that their range of practice was fairly extensive. Among these may be mentioned, copper baths, salve and medicament boxes, cupping-glasses, bougies, stands, basins, scalpels, scissors, spoons, sounds, tooth-brushes and forceps, sponges, bandages, compresses, foot-holders, and enema syringes.

The wandering physicians we have already spoken of as followers of the Pythagorean system, but among them were to be numbered, no doubt, hosts of charlatans, and quacks.

The gymnasts also deserve a word or two. One of the main features of the earlier Greek civilization was the attention paid to physical culture. All persons, save perhaps the deformed, were required to take part in gymnastic exercises and contests, women as well as men. In Sparta only the strong were permitted to live, the weakly and crippled being cast out beyond the walls of the city. To meet the needs of the case gymnasia were established. In course of time it became necessary to deal with accidents and the smaller surgical ailments so that a system of medicine arose, which in the main advocated the treatment of disease by means of baths, massage, and exercise. Some of these athlete physicians were held in great repute.

At the head of these institutions was the director or gymnasiarch, Under him was the sub-director or gymnast, who directed the pharmaceutical treatment of the sick, and, finally, the iatroliptes, who put up prescriptions, annointed, bled, massaged, dressed wounds, treated abscesses, and reduced dislocations.

Military doctors were also an institution and were held in great honour.

Women were not allowed to practice medicine. At most they attended at confinements where they performed minor offices, such as cutting the cord and washing the patient.

The rewards of the physician seem to have been fairly good, considering the times. The minimum fee appears to have been about twenty cents a visit. Of course, in those days the purchasing power of such a sum was much greater than it is to-day. A successful practitioner, Demokedes, received in two years practice in Ægina one Æginetan talent, about 1,600 dollars, and during three years in Athens, 100 Attic minæ, or 1,050 dollars. Polycrates of Samos received from Darius the Mede, for replacing a dislocated bone that no one else could cure, a pair of golden vessels. His modesty did not prevent him complaining to the great king of his ingratitude and stinginess, and he was, therefore, given in addition a well-furnished house and a place at the royal table. Still greater was the reward of Cleombrotus, who for healing Antiochus the First, of Seleucus, received the immense sum of $118,000.

These were the pampered minions of fortune. As in our own time, I fear there were some who received less than nothing for their reward. The state physicians were paid a yearly sum, provided out of the taxes.

Hippocrates, even in his own time styled "The Great," an epithet which has not been begrudged him in succeeding ages, was born in the island of Cos in the first year of the eightieth Olympiad (about 460 B.C.), thirty years before the Peloponnesian war. He was of an Asklepiad family, being according to the story the eighteenth in the direct male line from Asklepios; on his mother's side, the nineteenth from Hercules. He, therefore, would early be instructed in all the traditionary lore of this celebrated race, and would be initiated into the mystic rites pursued at the famous temple in his birthplace. He is said to have studied medicine under his father and the gymnasiarch Herodicus. In philosophy, he was an adherent of Heraclitus, one of the most illustrious of the followers of Pythagoras. He travelled widely in foreign countries, notably Egypt and Asia Minor and thus, no doubt, became conversant with whatever there was of medical teaching and practice in his day.

That we may adjust our mental perspective, let us glance for a moment at the time in which he lived. It was the "Golden Age" of Pericles, the most enlightened and greatest ruler Athens ever possessed. It has been said that while "other ages have had their bright particular stars, the age of Pericles is the Milky Way of great men." Truly, they were giants in those days. Æschylus, Sophocles, and Euripides were producing their immortal dramas. Anaxagoras, Zeno, Socrates, and Plato were creating the new study of philosophy, destined to revolutionize the human mind; Democritus and Leucippus had invented the atomic theory; Myron and Phidias were carving out of marble their incomparable masterpieces; Herodotus was recording his travels in the great work which earned for him the appellation of "The Father of History;" Hippocrates was still a young man when other lights appeared, the historians Thucydides and Xenophon, the orators Lysias and Isocrates; the scoffer Aristophanes. As a man of position and education, Hippocrates must have been thoroughly imbued with the spirit of the age in which he lived and, no doubt, represented in himself the highest literary and scientific culture.

We are enabled to form a very accurate opinion of Hippocrates' character and attainments from his voluminous writings, which fortunately have descended to us in a tolerable state of preservation. Without entering into the vexed question of the genuineness or otherwise of some of these, for it is certain that not a few are the production of his descendants or disciples, or of unscrupulous individuals who desired to add the weight of his name and authority to their own less worthy productions,

we will not go far astray if we see in the collection an accurate presentment of the principles which the "Father of Medicine" laid down and of the lines of practice which he adopted. Renouard, gives the following as the genuine productions of Hippocrates: The Aphorisms; the Prognostic; the first and third books of Epidemics; the Regimen in Acute Disease; the treatise on Airs, Waters, and Places; that on Articulations and Luxations; that on Fractures; and the Mochlic, or the treatise on Instruments and Reductions. Other works included in the Hippocratic collection but probably from other hands, are: that on Treatment; The Sacred Disease; The Laboratory of the Surgeon; treatises on Fractures; on Articulations and Dislocations; on Wounds of the Head; on Diseases of the Eye; on Fistula; on Hæmorrhoids; monographs on Generation; the Seventh Month of Pregnancy; the Eighth Month of Pregnancy; on Superfœtation; on Accouchment; on Extraction of the Dead Fœtus; on Diseases of Women; on Sterility; on Dentition; and some fragments of a work on Diseases of Girls, dealing chiefly with hysteria. To these were added afterwards the works of Pythagoras, Plato, Aristotle and others, the whole forming the so-called Hippocratic Collection, which was recognized as the most considerable monument of medical knowledge and as such formed an integral part of the great libraries of Pergamos and Alexandria.

A study of these works shows that four great ideas stand out pre-eminently as characteristic of Hippocratic Medicine. Hippocrates was probably the first to discover and lay down the fundamental principle that the processes of life and disease alike are governed by what we would now call natural laws, and, as a corollary of this, that it is only by accurate observation of the actual phenomena of disease that we can proceed to safe generalizations on which to base theory or outline rational practice. He denied the influence of the supernatural in pathogeny, and emancipated medicine from the priestcraft and superstition which had enthralled it. Consequently, the Hippocratic school became unrivalled in antiquity for habits of minute observation and the accurate interpretation of symptoms. This principle has proved to be so solidly grounded and so rational that it has lasted until now, and it is not too much to say that the true method of clinical study, the method in vogue to-day, notwithstanding our immense superiority in actual medical knowledge, is the method of Hippocrates. The third great characteristic was the wonderful artistic skill and judgment with which the Hippocratic physician made use of the meagre materials and tools that he possessed. Finally, there was the lofty conception of the duties and personal character of the physician as portrayed in the famous "Oath,"

free alike from the mysticism of a priesthood and the pretensions of a mercenary craft.

It must not be supposed, with all his insistence on the necessity of observation, that Hippocrates undervalued theory. As a matter of fact, suppositions and hypotheses, often fantastical, appear on almost every page of his writings, but he had the rare sagacity, in those cases where theory and observation appeared to clash, to follow the clearer light of reason and experience. Hence, his descriptions of disease, as based on observed symptoms, are generally accurate, and the indications for treatment derived from them are usually sensible and practicable. He professed to examine into the phenomena of disease, to determine the natural properties and powers of the human frame, to ascertain in how far these were affected by external circumstances and morbid causes, and from these data to deduce his conception of disease and his line of treatment.

We have said that the "Father of Medicine" was a Pythagorean of the particular sect that followed Heraclitus. This school held that fire was the prime origin of all matter. By the collision and peculiar combinations of its particles, which are in perpetual motion, the four elements are produced. On this theory Hippocrates based his conception of the nature of the human body, his ideas of pathology, and his doctrine of therapeutics.

What seems to have been original with him, however, seems to have been the hypothesis of a principle which he calls Nature (Φύσις) which pervades the human frame. It is possessed of a kind of intelligence, so that it directs its motions, promoting those activities which are beneficial and repressing those that are detrimental. Subordinate to this general principle are others that he denominates Powers (Δυνάμεις) which are more especially concerned with the various functions of the body. The body itself is composed of the four elements, earth, air, fire, and water, combined in different proportions in different individuals, so as to give rise to original differences of constitution, resulting in the four temperaments. These influence both the intellectual and physical portions of the body, and may initiate disease independently of external causes, and, again, may modify the effect of these causes in different ways and different degrees in different individuals. The combination of the four primary elements, with the four states or qualities with which they were affected, of cold, dry, hot, and moist, gives rise to the four fluids or humours of the body, blood, phlegm, bile, and black bile. On this doctrine, which became known as the "Humoural Pathology," and was the dominant principle of many sects and theorists until the beginning of the eighteenth century, Hippocrates based his conceptions of

disease. A right proportion and admixture of the humours produced health; improper combinations or irregular distribution, produced disease. Hippocrates held, in the case of acute diseases at least, a certain natural process through which the humour passes, being first *crude*, becoming elaborated by *coction* or digestion, finally being expelled by resolution or *crisis* through one of the natural channels of the body. The duty of the physician was to foresee these changes, to guide them into the proper direction, so that he could "enable the sick man to conquer the disease by the help of the physician." His attitude was to be, therefore, one of armed expectancy. A leading Hippocratic doctrine, the influence of which has not entirely disappeared at the present day, was the *vis medicatrix Naturæ*. The guiding principle in therapeutics was to assist and not to hinder Nature. The physician had to watch the operations of Nature, to promote them or attempt to counteract them, according to circumstances. The tendency of these principles would, no doubt, be to engender extreme caution. And in fact, the Hippocratic physician was often reproached with inertness, for he rarely intervened with any vigorous or decisive action. He was accused of visiting his patient, looking wise, and then calmly sitting by to watch him die. There can be no manner of doubt, however, considering the state of knowledge, or rather of ignorance, in the time of Hippocrates and his more immediate successors, that this mode of treatment was much more likely to be followed by salutary results than a more active one dictated by caprice or rash empiricism. Another principle of treatment, which, at first sight, might seem to contradict the teaching of the beneficent and healing power of Nature met with in the works of Hippocrates, is that a disease is to be cured by inducing a contrary state of the system or a contrary state of the diseased parts. Thus, repletion is to be relieved by evacuation and, *per contra*, the effects of excessive evacuation are to be counteracted by inducing repletion. An excess or defect of the humours or qualities is to be combatted by augmenting or diminishing the contrary humour or quality. It may perhaps be said in support of this idea, which unquestionably often works out very satisfactorily, that after all it is only anticipating the operations of nature, which would bring about the same results were they not counteracted or inhibited by some malign condition.

We come now to speak of the famous doctrine of "critical days." When the coction, or digestion, of the humours has been effected it only remains for the elaborated product to be eliminated, which is done by means of the perspiration, the urine, or the stools. The days on which these changes were to be expected were known as "critical days." The signs which preceded or accompanied them were known as "criti-

cal signs." The gradual culmination of morbid phenomena is often yet referred to in medical parlance as *crisis*. It may be remarked, however, that the term "crisis" as anciently employed had not quite the same significance that it has to-day. The word originally meant "judgment." Critical days were, therefore, days for judgment. At these times the physician was able to determine the nature of his case and to make his prognosis. Naturally, these times were looked for with anxiety and a chief point in the Hippocratic system was to foretell them with precision. Influenced by the Pythagorean doctrine of numbers, it was taught that they were to be looked for on certain days determined by fixed numerical rules. Thus, the critical period, or days necessary for coction, was in its perfection four, the so-called quaternary. Seven, or the septenary, was also highly considered. Combinations of figures, however, produced more complicated periods such as, 34, 40, or 60 days. This precision may in some cases have been based upon a certain normal evolution of phenomena, which some infectious fevers, for example, no doubt manifest but in many cases it must have been entirely false and futile. It may, however, have had the advantage of inducing habits of accurate observation. Based upon this theory, the indication for treatment was of course to promote the evacuation. With this end in view Hippocrates employed cathartics, which he exhibited with considerable judgment and sagacity; he made use of diuretics and sudorifics; he bled; he used cupping-glasses; he administered injections and inserted issues. He was also acquainted with the effects of the external application of heat and cold, and prescribed ointments, plasters, and liniments. In his treatment of disease he, farther, laid great stress upon diet, rules for the proper management of which he laid down with great care and wisdom. Medicines he regarded as of less importance, though this phase of the subject was not neglected. Two hundred and sixty-five drugs are mentioned in his works, most, if not all, being of vegetable origin. Some of them still hold a place in our modern pharmacopœias.

The strong point of the Hippocratic physicians was their skill in prognosis, or the art of foretelling the course and result of disease. In this they probably have never been excelled. As showing the importance attached to it, we may quote the following, where Hippocrates observes, "That the best physician is the one who is able to establish a prognosis, penetrating and exposing first of all at the bedside, the present, past and future of his patients, and adding what they omit from their statements. He gains their confidence, and, being convinced of his superiority of knowledge, they do not hesitate to commit themselves entirely into his hands. He can treat also so much better their present

condition in proportion as he shall be able from it to foresee the future." Symptoms were observed carefully and often skilfully interpreted. Hippocrates, it is worthy of note, was the first to keep a detailed record of the progress of individual cases. Diagnosis must, in those days, of necessity have been imperfect, for anatomy was almost unknown and physiology was yet to be. The actual knowledge of Hippocrates and his contemporaries in these particulars was naturally very crude and imperfect. Arteries and veins were confounded, and nerves, tendons, ligaments, and membranes were regarded as analagous tissues.

To the wide range of the master's mind we owe the conception that all the external circumstances about a case must be made to co-operate as far as possible for the well-being of the patient. The division of diseases into sporadic, endemic, and epidemic forms, as, also, into acute and chronic, was first devised by Hippocrates and he noted the influence of meteorological conditions upon certain types of maladies.

The hundred years following the death of Hippocrates are singularly barren of scientific achievement in medicine. It may have been that the temperament of the age was more inclined to speculation than to research, or the reverence for the name and achievements of Hippocrates was so great that his successors were content to accept his views as final. Few were original enough to strike out for themselves. A more likely explanation, however, is that the conquest of Greece by Philip of Macedon and the enlistment of the country in a policy of world-conquest under his son, led to an atmosphere of uncertainty and unrest, far from congenial to the development of literary and scientific pursuits. Consequently, medicine in common with other branches of intellectual activity began to wane. Little more than the names of the leading physicians of this period has been preserved to us, and their works have been entirely lost.

Hippocrates is said to have left his practice to his sons, in conformity with the custom of the time, and it continued in his family for several generations. Praxagoras of Cos is one of those who is said to have contributed to the improvement of the art. He paid great attention to the pulse, which Hippocrates seems, strangely enough, to have overlooked.

We must not, however, neglect to speak of the work of two great philosophers, who indirectly had considerable influence on the development of medical ideas. Plato, in his dialogue called Timæus and in his Republic, enters into various discussions on questions relating to the functions of the body and on the effect of their derangement in producing morbid states. His speculations are largely metaphysical and probably contributed not a little to stay the wheels of medical progress. This

philosopher, it is noteworthy, introduced into natural science the doctrine of final causes.

To Aristotle medicine owed much more. Belonging to an Asklepiad family he received the partly medical training traditional in this family, and also appears to have practiced medicine as an amateur. He wrote voluminously on questions of natural history. He dissected many species of animals and thus was able to correct some of the anatomical errors of Hippocrates. He was the first to write regular treatises on comparative anatomy and physiology. In this way he laid the foundation of many studies which are related to medicine, and perhaps, more than all, impressed on his disciples the importance of observation in the study of natural phenomena. The cardinal point in his philosophic system is that all ideas are due to sensation, in opposition to Plato, who held that knowledge depends upon mental intuition. The attainments of Aristotle were so great and his genius so commanding that his successors accepted indiscriminately both his speculations and his facts. It is always easier to accept opinions ready-made than it is to enquire for one's self. Gradually, therefore, in an age naturally inclined to reverence authority, the least valuable of Aristotle's work, the theoretical, acquired an undeserved preeminence. As a consequence, for many hundred years the advance of natural science was retarded rather than promoted. Aristotle's influence was, however, exerted for good in connexion with the new seat of learning to which we have now to refer.

One of the redeeming features in the character of Alexander the Great was his interest in learning. Two of his generals alone evinced the same spirit, Eumenes and Ptolemy. The former brought together a library of some two hundred thousand volumes at Pergamos; the latter established at Alexandria an institution that became one of the wonders of the then civilized world.

With the foundation of the Alexandrian library in 320 B.C. the centre of literary and scientific culture was transferred from Greece to Egypt Under the fostering care of the Ptolemies, a collection of from six to seven hundred thousand volumes, many of them of priceless value, was brought together. The most renowned scholars of the day were invited to Alexandria. They were given homes near the library, provided with salaries, and entrusted with the work of classifying and editing the manuscripts. In process of time lectures were given and discussions held. In this way a great centre of learning sprang up, the reputation of which, in almost all branches of intellectual culture, was unrivalled in antiquity. Its medical school soon surpassed the older ones of Cos and Pergamos, and for the next five hundred years the most famous physicians received their training within its walls.

The reason for the excellence of its medical school and the great celebrity which it attained is to be traced to the introduction of the practice of dissection. To the Greek a dead body was sacred. To touch it was profanation. Consequently, the meagre knowledge of anatomy that is evinced in the writings already referred to was gleaned from dissections of animals or possibly from a cursory observation of the bodies of those slain in battle. A systematic and thorough examination of the human body does not appear to have been undertaken. Conditions were, perhaps, a little more favourable in Egypt, owing to the custom of disembowelling and embalming the dead. Even here the prejudice against touching a corpse was intense, for we are told that the embalmers, after having performed their office, were often hooted and stoned out of the place. Under the Ptolemies, however, the practice of dissection was not only permitted but encouraged, and condemned criminals were handed over to the college of Alexandria for this purpose. The age of the Alexandrian ascendency is therefore termed the Anatomic Period.

Two names now stand out preeminent, Herophilus and Erasistratus. Unfortunately their writings are almost entirely lost and we have to judge of their work at second hand.

Herophilus was a Greek, born at Chalcedon, and trained at the schools both of Cos and Knidos. He was particularly noted for his anatomical studies and his skill in practice. The name given to the common meeting-place of the sinuses of the dura at the occiput, the torcular Herophili, still perpetuates his name. He described the membranes of the brain, the choroid plexus, the ventricles of the brain, the tunics of the eye, the intestinal canal, the thoracic duct, and the genitalia. Besides this, he wrote on general medical subjects, such as the pulse, the eye, obstetrics, and made many commentaries on Hippocrates. His reputation was such that four noted physicians wrote upon his work, and he is mentioned by Galen and Celsus in terms of great respect. He professed to be a disciple of Hippocrates and adopted the doctrine of the humours. He advocated bleeding and made free use of drugs.

Erasistratus was the contemporary and rival of Herophilus. He came to Alexandria from the court of Seleucus Nicator at Antioch, whose son Antiochus he healed of a secret malady, which turned out to be a love affair with his mother-in-law, Stratonice. Like Herophilus, he was a devoted student of anatomy. He described fairly accurately the valves of the heart and recognized that the arteries and veins took their origin from that organ. He discovered the lymphatics and maintained, contrary to Plato and some others, that the epiglottis prevented the entrance of fluids into the lungs. Erasistratus on the whole rather depreciated Hippocrates. He laid but little stress on the use of drugs and inclined

to mechanical explanations of disease. He was the first to give a rational, though of course necessarily an inadequate, explanation of inflammation. In his practice he relied on exercise, diet, and baths, and other hygienic measures. He died about 280 B. C.

An important point to which we should now refer is the division of medical practice into different branches, exercised by distinct classes of practitioners, which took place early in the Alexandrian period, a distinction that ultimately became accepted by all schools and sects of medicine. We have seen something of this kind already existing, even before the time of Hippocrates, but the distinctions now become more definite and formal. Three departments became recognized, dietetics, pharmacy, and surgery. It should be remarked, however, that these terms did not then have the same meaning that they have now. Dietetics embraced not merely the regulation of the diet, but everything connected with the management and well-being of the patient. It included very much what would now be considered under the scope of the general practitioner. The second comprehended the duties of the apothecary or compounder of drugs, together with some of those of the surgeon. The third embraced the treatment of surgical diseases, many of the operations, however, being relegated to professors of the second branch. These distinctions, though to a large extent frivolous and invidious, no doubt for the time, at all events, conduced to the improvement of the various departments of medicine.

It is fitting, too, just at this juncture, that we should refer to the first, and what is in many respects the most important, of the great divisions of the medical world into rival camps or sects. The great schism into Dogmatists, or as they are sometimes termed Rationalists, and Empirics, took place in the earlier portion of the Alexandrian period. The dogmatists claimed to be followers of Hippocrates and received their name from the fact that they professed to set out with certain theoretical principles derived by induction from the study of the observed phenomena of disease, upon which they based their line of practice. They held that before attempting to treat any disease the physician should make himself conversant with the nature and functions of the part affected, or rather of the body as a whole, with the changes which it undergoes as a consequence of morbid processes, and with the operation of remedial agents upon it. The empirics, on the other hand, contended that this knowledge is impossible to be attained, and, even if it were attained, is unnecessary. Experience should be our sole guide. If we step beyond this we are liable to fall into dangerous and often fatal errors.

It is easy to see that in an age when the means for observation were necessarily imperfect, and the observed phenomena of disease were few

and detached from their natural relationships, generalizations must often have been based on insufficient data, and theory and speculation must sometimes have run riot. To this may be added the natural indolence of mankind which is inclined to take its opinions on the authority of others without attempting to verify them for itself, and without any effort to extend the sum of actual knowledge. What happened was what one would naturally have expected. The really valuable portion of the Hippocratean system receded into a subordinate position and the least valuable, the speculative and theoretical, was exalted and made perfect. It is not surprising, therefore, that certain of the more practical spirits should have revolted and eventually cut themselves loose from the shackles of what they felt was an irrational and futile pretension. This change in view-point came about gradually. The germ of the secession may perhaps be traced to Knidos, where as we have seen, the tendency of the teaching was to lay more stress upon the practical aspects of medicine than upon theory. The empirics themselves confessed to no master, but it is a curious and suggestive fact that they believed themselves to be in the true apostolic succession from Hippocrates. Through the influence of Philinus of Cos, a pupil of Herophilus, of Serapion, and Glaucias of Tarentum, the scattered elements of dissent became crystallized into a definite system. The chief feature of the empiric school was that they based their practice on experience, to which term they gave a particular significance. Experience could be obtained from three sources and three alone—observation, history, (or recorded observation), and judgment by analogy. These three bases of knowledge were called the "tripod" of the empirics. They were particularly skilled in surgery and in the use of drugs. In the second century they became closely related to the philosophical school of Sceptics, whose founder, Sextus, was an empirical physician. The system passed to Rome and flourished for many centuries, being recognizable as late as the beginning of the Middle Ages.

For some centuries medical men were attached to one or other of these two schools and apparently in about equal proportions. In the main, the followers of Herophilus clung to the doctrines of Hippocrates, on whose works they commented extensively. They ultimately seem to have become lost in theoretical speculation and to have maintained too high a standard of literary excellence. The Erasistrateans on the whole thought less of authority and paid more attention to the special symptoms of disease, becoming finally absorbed into the ranks of the empirics.

A candid survey of the state of Medicine during this period goes to show that the progress made was great and permanent. The chief gain was, no doubt, the systematic study of anatomy, which paved the way

for greater things in the future. It is evident, however, that the knowledge of function did not keep pace with the knowledge of structure. It was for this reason, probably, that the empirics were able to dispense with the study of anatomy. The methods of the Hippocratean school, no doubt, also were greatly improved, surgery and obstetrics being the points in which they most favourably compared with modern times.

We must now consider how these various systems fared when transplanted to an alien soil.

It is a remarkable fact that the Roman people, with all their great and noble qualities, never attained any particular excellence in the gentler amenities of civilization, to wit, literature, the arts, and sciences. In fact, it was not for several centuries, not until they had extended their authority far beyond the bounds of the Italian peninsula and consolidated one of the greatest empires the world has even seen, that they found time even to tolerate these tokens of intellectual culture. Their literature, in which perhaps they attained their greatest heights, was after all but a feebler reflection of older Greek originals. In art, architecture, philosophy, and the sciences, they were servile copyists. To-day, the Romans are remembered for their language, their laws, and their roads, not for their artistic sense or natural refinement. Perhaps their essentially practical genius was radically inimical to the nobler efforts of the intellect. One would have thought, however, that in so practical a matter as the healing of disease they would have excelled. But not so. In this they were even more lacking than in any department of knowledge. We are expressly told by Pliny, indeed, that they got along for six hundred years without physicians. Probably by this meant only that during this period there was no systematic teaching in medicine, and no persons who specifically devoted themselves to it as a pursuit. There was, it is true, a cumbrous and elaborate practice, inextricably associated with the rites of religion, derived from Etruria, and the worship of Asklepios was early introduced, but when recognized and reputable practitioners make their appearance it is from Greece, or from Greece by way of Alexandria, that they come. The Romans, themselves, originated no medical school or sect, though several saw the light or at least became popular on Latin soil.

One of the most eminent of the early Greek physicians in Rome was Asclepiades, who was born in Bithynia about 124 B.C. At first a teacher of rhetoric, he came to Rome as a young man, where he became the friend of Cicero. Not succeeding as well as he expected in this line of work, he devoted himself to the practice of medicine, with what definite qualifications we do not exactly know. He seems to have been a man of good natural ability, a keen judge of human nature, and of consider-

able shrewdness and finesse. He began, as men who are conscious of their own shortcomings often do, by decrying the attainments and vilifying the practice of others and claiming to be the originator of a more excellent way. He combatted the teaching of Hippocrates, denying, more particularly, the *vis medicatrix Naturæ*, for, as he pointed out, Nature often marred rather than helped the cure. He had the discretion to avoid the more drastic methods of practice and relied chiefly on diet, exercise, massage, and bathing. His great popularity has been ascribed by some unkind persons to the fact that he prescribed wine freely and in everything sought the comfort of his patients, even going to the length of indulging their inclinations and yielding to their prejudices. There must be something in reincarnation, for, methinks, we may recognize the spirit of Asclepiades abroad amongst us even to-day.

His philosophical tenets were based on those of Epicurus. On this master's doctrine of pores and atoms Asclepiades attempted to build a new theory of disease. All morbid action was supposed to be due to alterations in the size, number, arrangement, or movements of the atoms. These atoms were aggregated into passages (πόροι) through which the juices of the body were conveyed. Acute diseases depended essentially upon a constriction of the pores or an obstruction of them by a superfluity of atoms; the chronic, on a relaxation of the pores, or a deficiency of the atoms.

This theory, as modified by his pupil Themison, became the dominant theory at Rome, and, under the designation Methodism, for some centuries eclipsed the older Dogmatic and Empiric schools.

Themison seems to have been actuated by a desire to steer a middle course between the hide-bound speculations of the Hippocratic tradition and the rule-of-thumb methods of the empirics. In the main, he held to the idea of Asclepiades to reduce the science of medicine to a few simple laws, which might be readily understood and as readily put into practice. His system was, in fact, simpler than that of his master, in that, while he retained the principles of relaxation and constriction, he discarded the speculation in regard to pores and atoms. He, however, recognized a third or mixed state, in which the two primary conditions were more or less opposed. Treatment was directed not to any particular organ or to producing the critical evacuations of the Hippocratic conception, but to relaxing the body when it was constricted, contracting or astringing it if it were too lax, and if it were in the mixed state, acting according to the predominating indication. These simple rules of practice were the system or "method" from which the school took its name.

This theory of the Methodics regards the solids of the body as the seat and cause of disease, in which conception it is opposed to that of Hippocrates, who looked for the origin and development of pathogenic processes in the humours or fluids.

While to cursory examination the system bears some resemblance to the Empiric doctrine, strictly speaking the Methodists were dogmatists, though with a dogma differing from that of Hippocrates.

The Methodic school was the first important product of Greek Medicine on Roman soil. It attained for a time great popularity, and lived on for several centuries, influencing, in fact, to some extent the revival of Medicine in the Middle Ages.

The simplicity of this system no doubt accounted for the esteem in which it was held, but had the disadvantage that it made it a ready tool in the hands of the half-educated physician and the quack. Of this type was Thessalus of Tralles, who lived about fifty years after Themison. By cunning and unscrupulousness he attained great wealth and reputation in his time. He reversed the Hippocratic maxim that "Art is long," promising his pupils to teach them the whole of medicine in six months. The character of the man is sufficiently evidenced by the inscription which he had cut on his tomb (ἰατρόνικης) or "Conqueror of Physicians." The only addition he made to medical theory was in the introduction of the term "metasyncrasis," which had some vogue, by which he meant a method of producing an entire change in the state of the body.

One of the most considerable names among the worthies of the Methodic school is that of Soranus of Ephesus, who studied at Alexandria, and practiced at Rome during the reigns of Trajan and Hadrian. He is spoken of in terms of commendation by Tertullian and Augustine. One of his writings, on diseases of women, is still extant in the Greek original. It shows a remarkable amount of practical knowledge, and is the only complete work in regard to the subject that has come down to us from ancient times. It is noteworthy that the speculum, which has been so often reinvented since, was employed by Soranus, and specimens of very efficient mechanism and still earlier date have been recovered from the ruins of Pompeii. The Latin work of Cœlius Aurelianus, on acute and chronic diseases, if not indeed, as some think, a translation of an earlier work of Soranus, is valuable in that it is written from the methodic point of view, and gives us an accurate idea of the theory and method of practice of this important school.

Nothwithstanding the great vogue of the Methodic system, it was inevitable that in time its shortcomings would become apparent and attempts were made to harmonize its teachings with other and con-

flicting views. Thus, the Pneumatic school was founded by Athenæus in the first century of the Christian era, apparently with the idea of reconciling the humoural or Hippocratic pathology with the solidist or Methodic. To this end the philosophic concept of the πνεῦμα, or universal soul, was somewhat crudely translated into medical doctrine, to the workings of which both the normal and abnormal processes of the body were attributed.

The visionary nature of the many philosophical theories and the hopelessness of moulding the conflicting views into a coherent whole led many of the more independent minds to dispense with the hallmarks of system. These were the Eclectics or Episynthetics. They held to no shiboleth and professed to pick out what was best in all systems. Many of the most renowned physicians of Græco-Roman times were among this sect. Among them may be mentioned Rufus of Ephesus, and Archigenes of Apamea, who is mentioned by Juvenal. The latter wrote a treatise on the pulse, commentated upon by Galen, in which he indulged in a number of fine-spun distinctions and subtilties, based on preconceived hypotheses rather than on observation.

From this time on and for many hundred years, little or nothing that is new in the way of theory was promulgated. The world of medicine was disputed by rival sects, and every man held to what was good in his own eyes. Greece quickly declined as a martial and intellectual leader, though her spirit still lived on. In fact, the theories and speculations to which we have dealt in the preceding pages are not without influence to-day. The humoural and solidist conceptions of the etiology of disease, for example, still have their place, though in a modified form. And empiricism is not unknown. But the old controversy between naturism or dogmatism and empiricism has lost most of its force. With the invention of the microscope, the thermometer, the stethoscope, and other instruments of precision, accurate observation became possible. And with the accumulation of more sufficient data more correct reasoning was arrived at. As a result, the Hippocratic doctrine has renewed its youth. It is at once the most logical and convincing, and we, of the legitimate profession at least, are naturists once more. As a matter of fact, a careful and dispassionate consideration of the ancient controversy will show that the dispute, like so many others that at various times have occupied the energies of mankind, is partly verbal, and in so far as it is not verbal is a question of degree. The most militant dogmatist professed to base his theory upon facts, and the most convinced empiric could not effectively marshall his facts without some aid from theory. Until our knowledge becomes absolute and final, the truth will lie in a judicious compromise between the two extremes. In page after page of

the writings of Hippocrates, speculation and fact lie side by side, but "The Father of Medicine" had the rare good sense to realize that when theory or observation appear to conflict it is the wiser plan to be guided by the light of experience. So it has been with the great physicians of all ages and sects. Whatever their theoretical principles may have been, they invariably came to rely on a judicious combination of both systems, and in practical matters have been guided by an intelligent common sense. With the advance of knowledge, however, Medicine will cease to be an art and will attain the dignity of an exact science.

DEMONSTRATION OF A NEW HUMAN TRYPANOSOME.

BY

J. L. TODD, M. D.

Gentlemen: The specimens which I show to-night are interesting ones. They are interesting because they are from a new disease, and also because they demonstrate very clearly, indeed, how an apparently unimportant piece of research work may lead to very definite results.

Dr. Chagas was working with a species of *Conorhinus* in South America; and he was struck with the large number of flagellate organisms which were present in the alimentary canal of these insects. It is of course, well known that one genus of flagellate organisms—the trypanosomes—are transmitted by tsetse flies. This fact suggested to Dr. Chagas the possibility that the flagellate organiss which he found in the *Conorhinus* might be the parasites of some vertebrate host and that they might be transmitted by the bites of the insect in which he found them. Acting on this suggestion, several *Conorhini* were allowed to suck blood from a monkey and twenty days later trypanosomes were found in its peripheral circulation. The experiment was successfully repeated and the flagellate organisms were found in a very large number of the *Conorhini* which were examined at once.

Dr. Chagas then set himself to find out how these blood-sucking insects acquired the parasite which they transmitted. He went to the district in which they occurred most frequently and he found that these insects were very common in the houses of the poorer Brazilians; and that their habits were much the same as those of the ordinary bed bug,—they hid themselves in the cracks and crevices of the walls of the mud huts and came out at night to suck blood from the persons inhabiting these miserable dwelling-places.

Dr. Chagas observed that a disease was very common among the poorer Brazilians, which was characterized by a progressive emaciation, a high

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grade of anæmia and an irregular fever. The disease may be a chronic one and it may end fatally; but it has not yet been observed for long enough to determine its ordinary duration or whether recovery is usual. He examined many persons suffering from this disease without finding any parasite in their blood. It was not until a child was examined during an acute attack, when the temperature was high, that a trypanosome was found. By further examinations Dr. Chagas proved that this disease was a new human trypanosomiasis, produced by a new species of trypanosome which he called *Trypanosoma cruzi*.. By his experiments he has proved that *Trypanosoma cruzi* is transmitted by the bite of a *Conorhinus*. The *Conorhinus* belongs to the same species as the insect which has been popularly called the "Kissing bug" in this country; it received that name because it so frequently bit sleeping persons about the face. The South American species has the same peculiarity and, in Brazil, it is called for that reason, the "Barber."

Trypanosoma cruzi will live in experimental animals. Some very interesting observations have been made on the development of the trypanosome in guinea pigs.

Under one of the miscroscopes there is a specimen which shows *Trypanosoma cruzi* as it exists in the peripheral blood of a guinea pig. In appearance it does not greatly differ from the other pathogenic trypanosomes. Under another miscroscope is a specimen of the developing forms of the trypanosome which were found in the lungs. In this form the trypanosome has lost its locomotary apparatus and has become rounded. The nuclear material has divided into eight small bi-lobed bodies; it is very probable that each of these eight bodies, when set free by the division of the parasite, will become a new trypanosome. It is probable that this form of the parasite represents a stage in an a-sexual cycle of development,—inaschizogony. From the appearances which have been seen in the digestive canal of *Conorhini* which had fed upon blood containing *Trypanosoma cruzi,* it seems almost certain that the parasite undergoes a sexual development within the body of its insect host.

The discovery of the method of multiplication of *Trypanosoma cruzi* which takes place in the lung of a guinea pig is especially interesting because the occurrence of such a means of multiplication has long been suspected in the trypanosomes of vertebrates, although it has never been observed. Its discovery demonstrates once again how frequently observations made on the parasites of lower animals may be of value in interpreting the observations made upon similar parasites in higher animals. A similar method of multiplication had long been known to occur in a trypanosome of the frog. The frog trypanosome is a very large one. It casts off its flagellum and blepharoblast, undergoes certain nuclear

changes and forms itself into a sphere. The sphere passes through a number of rapid binary divisions until as many as sixty-four, or more, small spheres have been produced from it, each possessing a single nucleus. Each one of these may develop a blepharoblast, undulating membrane and flagellum and become a small trypanosome; each small trypanosome then develops to become identical with the parent parasite. Some of the trypanosomes of mamals, for example *Trypanosoma gambiense,* had been observed to produce rounded forms in the bodies of their hosts but the subsequent development of these forms had never been observed. The observation made on *Trypanosoma cruzi* makes it more probable than ever that the rounded forms of *Trypanosoma gambiense* represent a stage in a cycle of multiplication of that parasite.

SACRO-ILIAC STRAIN, TENDON TRANSFER, DOUBLE CONGENITAL CLUB-FOOT: CASE REPORTS

BY

J. HAMILTON NUTTER, M.D., Montreal.

This patient on the left, through whose kindness I am enabled to present to you this evening a case illustrating the cure of sacro-iliac strain, was referred to me last summer from the medical clinic of the Montreal General Hospital, through the courtesy of Dr. Campbell Howard.

The patient was forty-five years of age, a well built labourer in a sugar refinery. His complaint was of almost constant pain and tenderness in the region of the sacrum and right buttock. This pain had come on without special trauma about a month previously, and prevented him from working.

On examining him it was easily seen that he walked with a marked right limp, and inclined his body towards the sound side. On putting my thumbs over his posterior superior spines undue mobility could without difficulty be made out and on the right side this was accompanied by a soft, apparently cartilaginous crepitus with a well marked click. On the examining table his right leg, with the knee extended, could not be raised high in the air without bringing on his familiar sacral and gluteal pains. With the knee flexed, on the other hand, the thigh could be moved freely in any direction without discomfort, thus ruling out hip disease. In addition, his left leg was found to be about half an inch shorter that the right, so that his body weight was being unevenly distributed and would cause strain at the sacro-iliac as well as other joints. There being, however, but little bony support on the former articulation, through absence of anything resembling the ball-and-socket mechanism,

strain would here have the greater effect. The patient's sacrum was evidently not displaced, as his back was not specially flat. The condition was apparently one of simple undue mobility at the right sacro-iliac articulation. a mobility which was sufficient to irritate certain of the nerve roots lying immediately across the pelvic surface of the joint, and so cause pain in the distribution of the nerves to which these roots belonged. From an anatomical point of view the nerves in question would seem to be the superior or inferior gluteal or both, and the nerve root harassed by the rocking articulation beneath it would correspond to the lumbo-sacral cord, which lies across the joint in question in its descent from the lumbar spine.

Treatment would logically mean support to a strained mechanism. The patient's pelvis was tightly strapped at the level of the trochanters, the cohesive plaster extending as far forward as the anterior superior spines. This relieved his pain so much that I had a canvas binder made, with perineal straps, maintaining it at the level of his trochanters, which support I have asked him to wear for your inspection to-night. I may add that in women the binder may be kept down by an attachment to the stockings or even to the garters, but kept down it must be, or it is of no service. The remaining essentials are that it should be snugly fitting at the level of the trochanters, and that it should lace at the back.

In order that my patient's weight should be evenly distributed a half inch was added to the thickness of the sole of his left boot, on account of the shortness of that leg. The binder and the high sole were successful in immediately relieving his pain, and were worn something more than six weeks. Both were then discarded as unnecessary. At present my patient has no pain whatever, is very limber for his years and does a good day's work. He presents no symptoms whatever of sacro-iliac strain, and the mobility at the joint in question has disappeared.

This boy (W. S., age 9 years.,) was referred to the orthopedic clinic of the Montreal General Hospital last summer by Dr Walter Smyth. He had had an attack of anterior poliomyelitis some 5 years before, and was left with practically total paralysis of his calf-muscles, to such a degree that he could not raise his heel in the air against gravity. The dorsal flexors were good, the power of inversion was weak, but the peroneals or everting muscles were strong, so strong, indeed, that though dislocated forward from their groove behind the external malleolus they had succeeded in pulling the foot into a vagus or abducted position. In addition the plantar fascia, unopposed by the pull of the calf muscles, had drawn the heel down until the os calcis was perpendicular and the

arch of the foot greatly exaggerated. The boy walked with a decided limp and entirely on his heel. The strength of the peroneal muscles, and the actual harm they were doing in adding to the boy's deformity, suggested their transference to the os calcis to replace the paralysed tendo-achillis, to be preceded, naturally, by a straightening out of the existing deformity.

At the operation the plantar fascia was tenotomised and the excessively high arch lowered. The os calcis was made to point backwards as well as downwards by vigourous wrenching with the hands. The peroneal tendons were then dissected from their position and severed near the outer border of the sole. A heavy silk strand was then quilted up and down them to get a good attachment, and by this they were attached to the os calcis and to the tendo achillis at its insertion. No hole was drilled, but with a heavy needle a deep bite was made into the bone. The tendo achillis, which had been badly overstretched and was too long, was shortened by being folded upon itself. The wounds were closed with catgut, and plaster applied with the heel high in the air to prevent stretching of the transplanted tendons. Healing was uninterrupted, the silk giving no trouble, and to-day, nearly six months after operation, the benefit resulting from the operation can plainly be seen. The foot retains its improved and nearly normal form, the power of plantar flexion is now quite strong owing to the transplanted peroneal muscles, and the boy can walk almost without a limp. He is not yet allowed unrestricted use of the foot, as I wish to allow time for the firmest union of the peroneal tendons to their new attachment. This boy is of interest, also, in that he illustrates the first tendon transfer ever performed, by Nicoladoni in 1885. Nicoladoni also operated for the relief of talipes calcaneus due to paralysis of the calf muscles, but he attached the peroneal muscles to the tendo achillis instead of giving them boney insertion. This tendon to tendon transfer is now seldom employed, as experience has taught us that the paralysed tendon is apt to stretch too much.

My third patient (J.C., age 5 years) referred to me by Dr. Lennon, illustrates the cure of double congenital club foot, relapsed after several operations. Over the inner side of the right foot is seen the scar of a Phelps' operation performed a year and a half ago at one of the hospitals in this city. At this operation the soft parts right down to the bone are cut through at the inner border of the foot and inner side of the sole. On overcorrecting the foot a huge gaping wound is left, which has to heal by granulation. In the case of this boy the after-treatment, so absolutely essential to success, was for some reason not kept up, and

the foot soon relapsed to the condition shown by this plaster cast, which was made on the child's admission to the General Hospital.

On the right side a simple forcible overcorrection did not seem to give great hopes of success, as the inner border of the foot was extremely short and the bones here appeared too small to maintain the foot in a straight position. For this reason a wedge of bone was removed from the os calcis immediately behind the articulation with the cuboid, the peroneal tendons having been pulled to one side. The os calis being then in two parts, the front portion, carrying with it the forefoot, was swung outwards until the varus deformity was slightly overcorrected. In this position the gap in the os calcis was completely obliterated. The equinus deformity was lastly overcome by cutting the tendo achillis, and the foot put up in good overcorrection in all three directions by plaster extending above the bent knee. You will notice that even with the plaster off the foot turns out instead of in, the outer border of the foot is high and the inner border low instead of vice versa, and the heel is the lowest part of all, instead of being drawn upwards. The reason for extending the plaster higher than the knee is that without such procedure there is great danger of the plaster slipping around and being rotated inwards on the leg by the strong tendency of the clubfoot towards inversion.

This boy's left foot, on the other hand, illustrates the result of simple forcible overcorrection by hand, using the padded wedge. In this case the deformity was of mild grade, and a bone operation did not seem necessary. The foot was overcorrected again and again, the procedure being repeated until, after some half hour's hard work, the pressure of a finger was sufficient to maintain its new position. Plaster was then applied in overcorrection, and will be maintained until the bones at the medio-tarsal joints have readjusted themselves, have formed new facets, and are reeady to remain in their new position. The boy is now clumping around in his plaster legs, and will soon have his knees freed. The right foot, on account of the operative readjustment of the bones, will not need plaster fixation as long as the left, and another month or two will see the cast discarded. The left foot will need somewhat more restraint, the cast being removed at weekly intervals for massage. When the foot shows no longer any tendency to return to its former position the cast will be removed, and not until then.

AN UNUSUAL RUPTURE OF AN ANEURYSM.

BY

JOHN McCRAE, M.B., M.R.C.P.

Assistant Physician, Royal Victoria Hospital, Montreal.

The subject of this report, a male negro of 43 years, was admitted to my service in the Royal Victoria Hospital on March 30th, and died suddenly on the morning of April 2nd of a ruptured aneurysm. A porter by occupation, he had been troubled for three weeks by pain in the chest, beginning between the shoulders and coming to the front: it was burning in character, quite intense and severe on coughing or sneezing. Swallowing, also, was accompanied by the same pain. For an hour after eating the pain seemed increased, and occasionally he felt as if he were choking; by reason of the pain he could not sleep on his right side.

A Jamaican by birth, his history did not bear upon the case; he denied venereal infection and the use of tobacco and alcohol. A scar on the penis, slight but pigmented, was counted in the balance against his denial of syphilis, as was also the fact that his wife had had a miscarriage and that seven children had died in early infancy, leaving only one alive and well. He had spent ten days in hospital at Fort William since the onset of his illness, whence he had emerged somewhat battered.

The skin of the chest and back, desquamating in large flakes, bore eloquent witness at least to the energy of his treatment, if not to the intensity of his pain. While being examined, he would grind his teeth, and writhe, which was not, it must be admitted, given as much weight as he might have desired, as at other times he lay quietly enough in bed.

In the light of subsequent knowledge, it may be said that no sign of aneurysm was elicited; there were slight glandular enlargement and slightly palpable radial arteries, but no unusual dulness of the heart or in the thorax, no abnormal pulsations, although these were closely searched for, no abnormal ocular reflexes, no signs of laryngeal change, no enlarged spleen, and a liver slightly decreased in external measurements. Pressure on the chest antero-posteriorly gave some pain, and, at times only, the 8th and 9th dorsal spines seemed tender. The urinary examination and leucocyte count were abnormal. Re-examination on the afternoon of April 1st gave no additional information bearing upon the actual state of affairs, and with the remark (a mere guess so far as information went) that aneurysm must be kept in mind, we left him with no apprehension of the tragedy of the following day, when in the early morning he suddenly developed dyspnœa, slowing respirations and a pulse that was barely perceptible. Presently his breaths were drawn at

minute-long intervals and he died, not before it had been observed, however, that the right chest became flat on percussion from the apex to the 5th rib in front. Death followed the onset of dyspnœa in about fifteen minutes.

The autopsy, five hours after death, showed that an aneurysm of the transverse arch of the aorta, not bigger than 3 by 2.5 cm., had ruptured; the blood had passed behind the œsophagus and had dissected up the parietal pleura on the back wall of the thorax, throwing the lung forward, until a clot, weighing more than 1,200 grammes, had nearly filled the available space of the right chest. "The ascending limits of the aorta were not enlarged. The left carotid took origin from the innominate artery. The left subclavian opened 1 cm. beyond this. At the level of the left subclavian opening, on the posterior wall was an area 3 cm. in both diameters, surrounded by a distinct ridge and forming a shallow sacculation in which the wall was fairly transparent from extensive loss of the media." Evidently, we may comment, this was a shallow, old, true aneurysm. "At the upper and outer angle of this area was a somewhat slit-like opening 2.5 cm. transversely by 8 mm. in the long axis of the vessel" (this, in further comment, we may say, was evidently a transverse rupture which had occurred long ago, whose edges had time to become smooth and rounded) "opening into a false aneurysmal sac, lying to the left side of and in front of the aorta. This sac was 3 cm. from side to side, and 2.5 cm. in height. An opening from this sac (the final rupture) led into the tissues behind the œsophagus, and was in direct connexion with the huge retropleural hæmorrhage. In the first part of the descending aorta was another puckered area showing loss of media. Below this the aorta showed little change, save frequent fatty plaques of the intima."

By way of final comment, one may say that further examination might not have enabled us to appreciate the lesion; true, larynogoscopic examination might have told us something, but fluoroscopic findings would have proved negative because of the small size, and most of all, because of the position of the aneurysm; it would have remained for some time essentially an "aneurysm of symptoms."

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THE CANADA MEDICAL ACT.

It will be remembered that at the meeting of the Canadian Medical Association, held in Winnipeg in August last, the question of reviving the Canada Medical Act, 1902, came up for discussion. It was found that for certain reasons, three of the provinces refused to join the others in beginning the work made possible by this Act. A large and influential committee was therefore formed, consisting of representatives of all the Councils, and of the profession generally throughout the provinces, for the purposes of assisting Dr. Roddick in obtaining, from the Dominion Parliament, an amendment, to the effect that when five or more of the provinces agreed on the terms of the Act, the scheme of registration, so far as they were concerned, could be established.

The committee met in Montreal on the 16th November last, all the provinces, with the exception of Alberta and Saskatchewan, being represented. A lengthy discussion took place, in which the delegates from one of the larger provinces objected strenuously to any such amendmend, contending that, unless all the provinces consented, the Act would be unconstitutional. After a time, however, it was found possible to come closer together than had been anticipated, and a series of amendmends were drafted to satisfy those provinces previously objecting. These amendments were subsequently printed and sent to the various councils for their approval. In fact, everything was practically ready for presentation to Parliament, when the executive in British Columbia telegraphed, urgently pleading for delay, being unwilling, in fact, to go

further without submitting the amendments to the entire profession in that province. As the time for presenting bills had already nearly expired, there was no alternative but to postpone the introduction of the Amended Act. Dr. J. B. Black, member for Hants, had kindly consented to take charge of the Bill, and had practically secured the co-operation and support of the medical men in the House. The disappointment was, therefore, universally felt.

As to the amendments proposed by the Committee, these had reference chiefly to the subjects of preliminary education, to the scheme of representation, and to the so-called retroactive clause. It was originally intended that the Dominion council should take some cognizance of preliminary education. It is now proposed to leave that subject entirely to the provinces, whose councils, or whose representatives on the Dominion council, shall be obliged to satisfy themselves that the matriculation passed by candidates for the Dominion license is of a sufficiently high standard. While this concession may seem, to the casual observer, to be a matter of vital importance, there is every reason to believe that it will work out to the satisfaction of all.

The scheme of representation, originally based on census returns, will now give two representatives, on the Dominion council, to each of the provinces, and on account of their greater size, one additional to Ontario and Quebec. The universities, as originally proposed, shall each have one representative; and the Governor-General-in-Council shall appoint three members, each of whom shall reside in a different province. In addition, there shall be three members elected by such practitioners in Canada as by the laws of the province wherein they practise are now recognized as forming a particular and distinct school of the practice of medicine; and as such are by the same laws entitled to practise in the province. Each of these shall also reside in a different province.

As to the retroactive clause, so-called, the original draft practically read that when a person properly qualified had been engaged for six years in the active practice of medicine in one or more of the provinces of Canada, he shall be entitled to be registered under this Act as a medical practitioner, without examination. The amendment extends the period to ten years; but further provides that if the medical council in any province be not satisfied with the period of years thus prescribed, it may exact an examination in final subjects from the practitioners seeking registration in that province.

With reference to the vital question of examinations, it is thought now that the Dominion Council will relegate to a corps of assessors the supervision of the primary examinations as they are being held in the

various universities of Canada; while the Board of Examiners, to be known as the Medical Council of Canada Examination Board, shall undertake the examination of all candidates in the final subjects only. This will greatly lessen the expense, besides economising time. The examinations will be held only at those centres at which there is a university or college actively engaged in the teaching of medicine, or having hospital facilities of not less than one hundred beds.

It is not the intention by the Act to disturb the *status quo,* so far as the provincial boards are concerned. These will remain practically unchanged. For instance, they will still be expected to satisfy themselves by examination or otherwise, regarding the qualifications of candidates seeking a license to practice in one of the provinces only. Doubtless, in time, some of the smaller provinces especially, will refuse to examine, thus obliging all to come armed with the Dominion license. Besides, there being nothing in the Dominion Act to regulate taxation and the discipline of the profession generally, it will be seen that the provincial bodies must, for purposes of that kind, also continue to exist.

It is earnestly to be hoped that the delay in bringing the Amended Act before Parliament during the present session, will not seriously endanger the future of the measure. It is desirable that all the Provincial Councils shall be well represented at the meeting of the Canadian Medical Association in Toronto, in June next, when the work of the Winnipeg Committee will be fully reported and discussed.

The Colonial Reception Committee of the British Medical Association is particularly desirous of bringing the Annual Meeting, to be held in London in July next, to the notice of all medical practitioners residing in the Dominions beyond the seas, as affording them an unusual opportunity of visiting London both for the scientific purposes of the meeting and also for social intercourse with their fellow practitioners throughout the Empire. The Colonial Reception Committee in conjunction with the Colonial Committee of the Central Council, desires, through the medium of this JOURNAL, to extend a very cordial invitation to all medical practitioners in the Colonies, and assures them of a hearty welcome to the Annual Meeting and to the capital of the Empire. Great efforts are being made by these two committees to arrange such entertainments as it is hoped will meet with the approval of their colonial brethren and so add to the success of the meeting of 1910. Of this committee Mr. Edmund Owen is chairman, and Dr. Donald Armour, honorary secretary.

Reviews and Notices of Books.

DISEASES OF THE NOSE THROAT AND EAR, MEDICAL AND SURGICAL. By WILLIAM LINCOLN BALLENGER, M.D., Professor of Otology, Rhinology and Laryngology, College of Physicians and Surgeons, Department of Medicine, University of Illinois; Fellow of the American Laryngological, Rhinological, and Otological Association; Fellow of American Academy of Ophthalmology and Oto-laryngology, etc. Second edition, revised and enlarged; octavo, 930 pages; illustrated with 491 engravings and 17 coloured plates. Cloth $5.50 net. Lea & Febiger, Philadelphia and New York, 1909.

The exhaustion of the first edition within a year is sufficient evidence of its popularity. In his preface to the second edition the author informs us that he has sedulously endeavoured to remove the imperfections unavoidable in an issue from the original manuscript, and to make such improvements as are naturally suggested by having the whole book before the eye in printed form. In this he would seem to have been successful, the result being a book most complete and up-to-date, well printed and illustrated, which should admirably serve the purpose for which it was written, viz., a text book for students, as a guide for the general practitioner, and as a reference for specialists.

The book is divided into four parts. Part I. The Nose and Accessory Sinuses. Part II. The Pharynx and Fauces. Part III. Diseases of the Larynx. Part IV. The Ear.

In the chapter on the etiology of deformities of the nasal septum the subject is discussed at length, a number of authorities being quoted with their different views on this debatable question.

The surgical correction of deformities of the nasal septum is treated at length, the various operations described and illustrated, including the submucous resection now so frequently performed and for which the author has devised several instruments including the swivel cartilage knife.

In dealing with the surgery of the frontal sinuses the author states, that according to his experience, in not more than 5 per cent. of the cases in which the skiagraph shows inflammation of the frontal sinuses has it been necessary to perform the external operation; indeed, he says, his records show that only 2.5 per cent. of cases needed the external operation, whereas in 97.2 per cent. satisfactory results followed his operation on what he terms the vicious circle of the nose, an area which includes the middle turbinate, anterior and posterior ethmoidal cells, bulla ethmoidalis and any deformity of the septum interfering with drainage and ventilation.

He then describes the various operations both intranasal and external.

In the surgery of the tonsils he performs and recommends in practically all cases their complete removal either by tonsillectomy or morcellement, and speaks rather disparagingly of tonsillotomy, claiming that in many of the cases operated on by this method there is a recurrence of the trouble. This may be true where the removal is not sufficiently complete, but where the tonsillotomy is properly performed the chances of recurrence or subsequent annoyance would seem to be very remote.

As regards tonsillectomy it occurs to us that until the functions of the tonsils are more fully understood, one should hesitate in removing them completely from every case operated upon.

Snaring of the tonsils, a method gaining in favour in many quarters, is not discussed, mention merely being made that sepsis is more apt to follow a crushing operation than one performed with a sharp instrument, an opinion which is by no means universal.

In the section on diseases of the larynx, the author recognizes a membranous laryngitis as distinct from diphtheria.

In malignant neoplasms of the larynx a tabulation is given showing the improvement in the immediate and the remote death rate, and the net gain in the mortality following laryngectomy prior to 1889, and from 1889 to 1900. This might perhaps have been more instructive had the period been extended to a more recent date.

The tabulation shows the present (1900) total death rate before the end of the third year is 56.5 as against 96 per cent. prior to 1889. This he attributes to improved technique and asepsis and also to the more intelligent selection of cases.

As regards anæsthesia for larynxo-fissure and laryngectomy, rectal anæsthesia as practised by Cunningham, of Boston, and Stuky, of Lexington, is recommended.

Tracheobronchoscopy is fully described and illustrated, the methods of Chevalier Jackson being adopted by the author.

Part IV. on the ear concludes the volume, and like the preceding sections its subject matter is excellent and up-to-date.

The functional tests are fully described, including the caloric and turning tests which are invaluable in the differential diagnosis of labyrinthine and intra-cranial disease, the substance of which is taken chiefly from the recent writings of Barany and Neumann.

An interesting section on nystagmns concludes this instructive chapter on the functional tests.

In describing the operations on the mastoid it is with regret we note that no mention is made of the radical operation, in cases of cholestea-

toma without removal of the cholesteatomatous matrix as practised by Siebenmann and which in suitable cases gives excellent results, though the meato-mastoid operation is fully described. A carefully prepared article on deaf mutism brings to a close an excellent text book on diseases of the nose, throat and ear, and we are fully justified in predicting for it a success equal to, if not greater, than that attained by the first edition.

W. H. J.

A Practical Treatise on Ophthalmology. By L. Webster Fox, M.D., LL.D., Professor of Ophthalmology in the Medico-Chirurgical College, etc. With six coloured plates and three hundred illustrations in text. New York and London. D. Appleton and Company, 1901.

It seems but a short time since we reviewed the first edition of this work. Now it appears in a much enlarged form, very profusely illustrated, thoroughly brought up to date, and replete with references of the recent advances in ophthalmology. A point which we heartily endorse is the inclusion of chapters on the anatomy of the eye and the physiology of vision, because, as a rule, the effort to refresh ones memory on these points entails work which many are unwilling to perform. We note that Dr. Fox adheres to the use of the canulas in lacrymal obstruction. The operations for the extirpation of the lacrymal sac are very fully described and illustrated. The bacteriology of the eye has been very thoroughly gone into, and the relation of general diseases to those of the eye is also fully treated. Altogether the book is a valuable one for the advanced student.

J. W. S.

The Medical Epitome Series: Gynæcology. By Child and Peterson. Lea and Febiger, Philadelphia, 1909.

This book differs from most of its kind in that it is not a "Quiz compend," and, as is admitted in the preface, "there has been no attempt made to enter the field so well and so exhaustively covered by the larger textbooks on diseases of women." The treatment of the subject is very sketchy; the embryology of the female genitalia is considered in a little over half a page, while several pages are devoted to such uninteresting illustrations as Wathen's dilator, Sim's curette, a scapula, scissors, irrigating nozzle, etc. We doubt if many of the practitioners, for whom the book is evidently intended, would need the illustration of such an article as "Doyen's tumour screw," which in reality is the corkscrew of commerce.

On the Preventing and Treatment of Abortion. By Frederick J. Taussig, A.B., M.D. The C. V. Mosby Co., St. Louis, Mo., 1910.

This book of Dr. Taussig's is extremely complete and satisfactory. Indeed, apart from a few sentences, such as "Abortion is the previable expulsion of the human ovum," nothing but pleasure and profit can be gained from its consideration, There are, so far as the reviewer is aware, few books which have gone so thoroughly into the subject as does this extremely well illustrated monograph of Dr. Taussig. In addition to being well illustrated, and containing the accepted views of the best teachers, cases from the author's experience are introduced so unobtrusively as to give the desired effect, without suggesting that they are the main purpose of the book. The book can be heartily recommended to the general practitioner.

Essentials of Gynæcology. By Edwin B. Cragin, M.D. Saunders Question Compends, 1909.

This is the seventh edition of this small pocket book, and it is probably the best of its kind that we have seen. The subject is very thoroughly considered, and the sections on treatment have been brought into accord with the most modern teaching. All useless illustrations have been omitted and those in the book are well selected and instructive.

The Practice of Medicine: A Text Book for Practitioners and Students with Special Reference to Diagnosis and Treatment. By James Tyson, M.D. Fifth Edition, Revised and Enlarged, with 5 plates and 245 other illustrations. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut Street, 1909. Price $5.50 net.

The first edition of this work appeared in 1896, and it is well known in American Colleges. The fifth edition has the usual addenda that recent research makes necessary, and certain of the subjects have been rewritten. Professor Tyson feels the necessity for consideration, but with advances in knowledge books grow in size, and the present volume consists of more than 1400 pages. Especially interesting are the paragraphs on Graves' disease, in writing which Rogers and Beebe have taken part.

Principles of Hygiene. By D. H. Bergey, A.M., M.D., Assistant Professor of Bacteriology, University of Pennsylvania. Illustrated, 3rd Edition. W. B. Saunders Co., Philadelphia and London, 1909. Canadian Agents, The J. F. Hartze Co., Ltd., Toronto.

The reviews of the previous editions of this work have classed it among the best of the books of its kind. The present edition embodies the same

subjects on Hygiene as in the previous editions, but there have been considerable changes made in handling some of the subject matter. In the matter of sewage disposal, the author has greatly extended the subject, particularly concerning modern methods of sewage purification.

It is a matter of common comment that the subject of hygiene is making rapid strides at the present day, and that to a great extent our success in coping with diseases, particularly those of infectious character, can only be accomplished by a thorough knowledge of the methods of dissemination and by instituting active measures along the principles of hygiene.

Dr. Bergey takes up in a thorough manner industrial hygiene, and the methods of improving factory conditions. The value of proper hygienic regulations in our schools, militia and navy, is also discussed. The book is so thorough, that it may be recommended without hesitation.

Handbook of Diseases of the Ear. By Richard Lake, F.R.C.S. Eng., Baillière, Tindall, and Cox, London, 1910.

This volume is of the conventional textbook type, largely compilation, in which we find little to criticise. Where the author touches on the pathology of the diseases such as otitis media, we think the views given rather sketchy and hardly up to the present day requirements. We think the views given on the operative treatment of adhesive deafness more hopeful than the results of other observers would seem to justify, and therefore misleading. The same applies to his description of operative measures on the labyrinth for the relief of Meniere's disease, or tinnitus. These are given in a routine manner without laying what we consider proper weight on two important points, namely, the necessarily experimental character of such operations and the grave risk to which the patient is exposed by their performance.

W. H. W.

Some Common Remedies and Their Use in Practice. By Eustace Smith, M.D. H. K. Lewis, London.

This is an elementary volume taking up the use of tartarated antimoney, oil of turpentine, internally, the use and misuse of iron remedies, of alkalis, antispasmodics and the cure of spasm, some uses of opium, and sodium salicylate in certain serous inflammations.

Practical Medicine Series, Vol. X. Nervous and Mental Diseases. By Hugh T. Patrick, M.D., and Charles L. Mix, A.M., M.D. The Year-book, Publishers, Chicago.

Within the past five years the study of nervous diseases has been advancing with gigantic strides. The present volume brings the reader

strictly up-to-date. It is written in a very interesting manner, case after case being cited. The illustrations are good, the field entirely covered, and the reader told exactly what he wants to know. A short chapter on mental diseases is added at the end of the volume.

PROGRESSIVE MEDICINE. Vol. XII., No. 1, March 15th, 1910. Lea and Febiger. Philadelphia and New York. Six dollars per annum.

This volume is taken up with the surgery of the head, neck and thorax; infectious diseases, including acute rheumatism, croupous pneumonia and influenza; the diseases of children; rhinology and laryngology, and otology. The contributors are, Charles. H. Frazier, M.D., John Ruhrah, M.D., Floyd M. Crandall, M.D., D. Braden Kyle, M.D., and Arthur B. Duel, M.D. The description of the surgery of "cranial nerves" is very minute, and Dr. Frazier believes that the procedure which will be finally accepted as the ideal method for the relief of facial paralysis is "faciohypoglossal plus hypoglossal-spinal accessory anastamosis." Perhaps the most valuable section is that on infectious diseases in which we note extensive reference to McCrae's studies on empyæma and delayed resolution in lobar pneumonia, published in this JOURNAL. As further evidence of the care with which the field has been surveyed there is mention of Bruce's consideration of the status lymphaticus in the *Canada Lancet*. We should also like to call attention to the interesting reference to deaf mutish at page 310. Progressive medicine easily keeps its high place as a record of progress in all departments of medicine.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS: Vol. III., 1908, and Vol. IV, 1909.

NEW AND NON-OFFICIAL REMEDIES. American Medical Association, Chicago, 1910.

In February, 1905, the American Medical Association established the Council on Pharmacy and Chemistry. Its main object was to afford some guidance to the profession in prescribing proprietary articles. Under certain reasonable rules proprietors may have their preparations listed in this book which is known technically as N. N. R. The book is very interesting—much more so than the Pharmacopœia or National Formulary—and is reminiscent of the pleasant visits which all physicians have from the charming gentlemen whose business it is to "push the sale" of these commodities. One notices the frequent employment of the words "claim," "is said," "supposed to," "according to some authorities." Criticism is requested by the Council, and the present reviewer ventures to suggest that words have a meaning. The first sentence reads: "This book contains the medicinal substances," etc.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF DRS. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

Dr. Ludwig Burkhardt. "Intravenous Narcosis with Ether and Chloroform. *Münch. Med. Wochen., No.* 46, November 16, 1909, page 2365.

Burkhardt first experimented with intravenous physiological salt solution saturated with chloroform, narcotizing animals with ease and without complications. This method applied in four cases to the human was from the point of view of the anæsthesia most satisfactory but was followed in two instances by a passing hæmoglobinuria. Burkhardt next experimented with a 10% solution of ether in normal saline,—ether offering the advantages of being more soluble in water and of vaporizing at body heat. This concentration produced in animals severe hæmoglobinuria and in several cases a thrombosis which ended fatally. A 5% solution of ether, however, induced prompt narcosis in animals and was not followed by hæmoglobinuria or other complication. The method was then employed in narcotizing 33 patients.

The technique was that in vogue for ordinary intravenous saline infusion with, in addition, a preliminary hypodermic injection of scopolamin-morphine one hour before operation. (0.01 scopol. ydrobromate, 0.15 morphine). The temperature of the salt solution was 28°C. Cocaine was used as a local anæsthetic. In a majority of the cases the reflexes were abolished in from eight to ten minutes without the appearance of the stage of excitation. The odour of ether appeared promptly in the expired air. The solution was allowed to run freely until the abolition of reflexes was obtained. The tube was then clamped until consciousness began to return when from 30 to 70 ccm. was usually sufficient to recall complete anæsthesia. The quantity of solution required to produce primary anæsthesia varied greatly. In children of fifteen years 200-250 ccm. =10-17 ccm. of ether was sufficient. In adult females the average was 320 ccm. = 16 ccm. ether, and in men, 500 ccm. = 25 ccm. of ether. In 29 cases (women and children) narcosis was maintained without a return of reflexes throughout the whole operation,—in some instances for one hour and a half and over. In four cases only (all of them young men) was the anæsthesia incomplete, although the operations were carried out without consciousness on the part of the patients. The incompleteness of the narcosis is these cases is attributed by Burkhardt not to the method but to the nature of the anæsthetic.

Although the preliminary injection of scopolamin-morphine is recommended in muscular subjects, complete anæsthesia was successfully induced in several cases without its use.

Burkhardt claims that during the administration of the anæsthetic no respiratory disturbances occur and that the cyanosis so frequently accompanying ether inhalation is not observed at any time; further, that the pulse either remains the same as before operation or becomes stronger with the increase in the content of the vessels. Vomiting or retching did not occur once during narcosis. Subsequent effects—vomiting, nausea, headache—were absent entirely in thirty cases. In no instance was albuminuria or hæmoglobinuria following operation noted; neither did thrombosis nor infarction occur. In two patients a male aged 61 and a female of 63 years—there was observed after the narcotic a "transient bronchial irritation." Owing to the small quantity of ether in the solution, recovery from the anæsthetic is extremely rapid.

Burkhardt also employed combined ether and chloroform: Ether 5%-7% = chloroform ½%, in equal volume. This method was found of service where a complete absence of reflexes could not be obtained by the use of ether alone.

Burkhardt concludes as follows:

(1) That intravenous ether anæsthesia (combined with scopolamin morphine in adults) is the safest and most pleasant method of inducing general anæsthesia; that it is, however, to be reserved for special cases because of the special technique.

(2) That by its use irritation of the respiratory organs is avoided and blood pressure adequately maintained, and that, therefore, its use is indicated in all subjects suffering from impairment of the respiratory or circulatory organs.

(3) That over dosage is hardly possible.

(4) That, having consideration for the comfort of the surgeon, it is most suitable for operations upon the head and neck.

(5) That it is indicated, also, in cases where there is a strong dislike on the part of the patient for inhalation methods.

Dr. Peter Janssen. "The Question of Intravenous Narcosis." *Münch. Med. Wochen., No.* 3, January 18, 1910, page 136.

In this article Janssen refers to Burkhardt's paper reviewed above, and gives a cursory account of his own experiments with various solutions, including chloral hydrate, ether salt solution, and Nerking's fluid (ethyl urethan and chloral hydrate), all of which, as he states, are liable to produce thrombosis and embolism.

To Witzel and his pupil, Schöning, is given the credit of having first, in 1906, investigated experimentally the value of intravenous anæsthesia, using 5-10% chloral hydrate and ether salt solutions. These experimenters abandoned the method on account of fatal embolism and extensive necrosis at the point of injection.

Janssen substituted for infusion the intravenous instillation of pure ether, inserting the needle into a collateral near the junction with the main vein (and has invented a special syringe for this purpose), believing by this method that the dangers of thrombosis were lessened. He, however, concludes from his experiments that Burkhardt's article is misleading in its statement that "intravenous ether narcosis is the most harmless and the most pleasant method of inducing general anæsthesia," and that the discovery of a fluid suitable for intravenous narcosis which will not only anæsthetize but will also be without ill effect upon the constituents of the blood, is still a matter for bio-chemical research.

HERMANN KUTTNER.. "Intravenous Narcosis. *Zentralblatt für Chirurgie, No.* 7, 1910, s. 233.

In this article Küttner tabulates his experience in twenty-three cases with Burkhardt's method of intravenous narcosis. While no serious mishap was met with, pulmonary embolism undoubtedly occurred in two patients and in two others clotting was observed at the point of infusion, resulting in a blockage of the flow.

Küttner concludes that while the method offers many advantages to the operator, the anæsthetist and the patient, it must be abandoned, as it can be considered only good luck if no serious accident occurs during or following the administration of the anæsthetic

E. M. v. E.

PATHOLOGY.

UNDER THE CHARGE OF DRS. ADAMI, KLOTZ, AND NICHOLLS.

OEDEMA.

Meltzer, *Amer. Med.,* 1904, viii, No. 1, 2, 4 and 5.
Pearce, *Archiv. of Int. Med.,* 1909, June.
Bolton, *Jour. Path. and Bact.,* 1909, xiv, p. 49.
Fleisher, Hoyt and Loeb, *Jour. Expt. Med.,* 1909, xi, No. 2.
Fleisher and Loeb, *Jour. Expt. Med.,* 1909, xi, No. 3.

The author (Meltzer) discusses the question of œdema from various standpoints, and gives the most important views which have been written on the subject. By œdema is to be understood the pathological increase

of lymph in the tissue spaces or in the various cavities of the body. This lymph which is increased, is similar in quality to that normally present in the tissues. To properly understand the accumulation of this excess of fluid in the tissues, the author discusses at some length the normal process of lymph secretion in various parts of the body, for it is on these principles that the various theories of the pathological excess are established. Apparently one must admit from the first that all are not agreed on the normal process of lymph production. Ludwig, who studied the question in the early 40's of the last century, came to the conclusion that the lymph was secreted in the tissues mainly by process of filtration. By various experiments, he showed that the increase and decrease of the lymph flow and also the actual amount of lymph in the various tissues was directly dependent on the blood pressure of the capillaries. He thus found that, when the venous return from any tissue was impeded, there was a corresponding slowing of the blood stream in the capillaries, with a passive congestion. Following this, an excess of lymph passed from the blood vessels into the tissues. This could also be hastened if the tissues were kneaded. Ludwig also introduced the factor of filtration in urinary secretion. Ludwig's findings were accepted until recently in the 90's Heidenhain began his studies on the secretion of various glands. He came to the conclusion that various tissues have attractive forces, and these are able to draw to them materials for their use. When such tissues had attracted fluids, they were in a position to again dispose of this by other secretion. In other words, the process of lymph production was not a mechanical one, but that of a vital action on the part of the endothelial cells of the blood capillaries. Heindenhain found that there was not a constant relation between the blood pressure and the lymph flow. He was able to considerably increase the pressure both in the arteries and in the veins, without obtaining an œdema. Heidenhain, moreover, found that there are various substances which, without altering the blood pressure, are able to increase the flow of lymph, and from this he concluded that the endothelial cells of the capillaries can be stimulated to greater action of secretion.

Lazarus-Barlow was also opposed to the physical theory of lymph formation. He found that the temporary obstruction of the venous circulation did not lead to increase in the lymph flow. He believed that the accumulation of waste products within the tissues in some way reacted upon the blood vessels, which responded by a local arterial congestion and an increased output of lymph.

There have been others who have extensively studied the process of

lymph formation, and among these, Asher and Busch have found that the lymph itself contains a toxic substance which is foreign to the body, and which in some way iritates the tissue in which it is lying; thus the tissues forming lymph will be stimulated in accordance with the amount of the toxic substance contained in the fluid. It was found that the re-inoculation of an animal with this lymph stimulated the lymph-producing tissues everywhere to greater activity. These studies, of course, support the vital theory of lymph secretion. Whereas Heidenhain and Hamburger consider the endothelial cell as the seat of vital or physiological tctivity, Asher, in common with Lazarus-Barlow, places the physiologic or vital forces in the cell of the particular organ.

There is still some question as to which of the vascular streams are the most active in producing lymph. It was for a long time held that the lymph, after it had been utilized by the tissues in various parts, was again reabsorbed by the lymphatic channels and returned to the blood stream through the thoracic duct. Only recently has more definite information been received respecting the course of lymph after it has passed out of the blood-vessels. At the present date, it appears that the lymph of the tissues is handled mainly by the blood stream, and that resorption by lymphatic vessels is only small in degree. The blood capillaries are far more active in reabsorbing materials in the lymph and passing them on to the respective organs, than are the lymph channels.

Exactly how this absorption takes place is also still under discussion. Starling believes that the endothelial membranes of the blood channels are permeable. Others consider that osmosis plays an important part in the diffusion of the fluids, while Lazarus-Barlow and Asher strongly adhere to the vital forces of the tissues, whether these are located in the endothelial cells or in the cells of the organ. Respecting the lymph in man, the views of the various authors are divided into the mechanical and vital theories.

It is an interesting fact that our knowledge concerning pathological œdema antedates the physiological studies of lymph formation. Early in the last century, Bright recognized the almost constant occurrence of anasarca with albuminuria. Bright believed that the loss of albumen through the kidney caused the blood to become watery, and that now the capillary vessels allowed this thin fluid to pass into the tissues. It was, however, later shown that the occurrence of albumen in the urine had no direct relation to œdema. In the matter of renal œdema, Cohnheim found that diminished kidney secretion could not alone cause œdema, but he believed that the blood gave up more water to the tissues, and hence the kidney secretion was diminished. Cohnheim further found

that large quantities of fluid could be introduced into the circulation without producing œdema, though if the amount introduced was excessively large, ascites would be produced. In none of the cases, however, was there œdema of the skin. If, on the other hand, along with the introduction of fluid, the skin was irritated in the least way, œdema occurred at the point of irritation. In other words, it was found that the local irritation produced an increased permeability of the vessel wall similar to that of inflammation. In introducing excessive amounts of fluid, Cohnheim found that certain regions (intestines and glands) were more liable to excrete fluid than others. This he explained by assuming that the enormous hydræmic plethora produced by transfusion was sufficient to cause transudation through the more permeable capillary walls of certain regions than others. Acute hydræmia alone he believed caused no transudation, but if this hydræmia become chronic, transudation soon occurred.

After studying many experiments, Cohnheim arrived at the classification of the many forms of œdema. (1) Oedemas which are due to excessive permeability of the capillary wall and (2) Oedemas due to venous congestion. In each instance, however, the author believed that a change in the vitality of the endothelial cells is of great importance.

Senator agrees with Cohnheim that renal œdema is really of an inflammatory character, but whereas Cohnheim considers the œdema as a secondary condition due to a toxic agent produced by nephritis, Senator is of the opinion that the œdema is just as primary a condition as nephritis, and that both are brought about by the same toxic agent.

Hamburger believed there was a common law governing all œdemas, and in this he discarded all physical factors. He believed that there was a hyper-secretion of lymph by the endothelial cells of each, and they were stimulated by the metabolic products in the stagnated venous blood. He believed that in some way there was a greater permeability of the vessel wall, which might later lose its secreting power and act as a filter. The theory of osmotic pressure has been brought into prominence by the recent investigations on the elimination of chlorides in nephritis. Several

In considering these various theories in relation to diseases in man, authors have found that in nephritis the tissues contain more chloride than in the normal state, and on this account they believe that water was attracted to these tissues from the blood channels, increasing the amount of fluid in the various tissues, while, at the same time, the vessels were depleted. Of course, it must be considered that when the tissues have increased their chloride content, while the blood is low or at least normal, the extra vascular osmotic pressure is much increased. Exactly

what role this process plays in the various œdemas is not fully investigated.

There is one other form of œdema which does not appear to follow the general rule of œdemas of the body. Acute œdema of the lungs has several distinctive features, among which may be mentioned its rapid or sudden onset and often its quick disappearance. It occurs in relation to several acute and chronic diseases, although not a general factor in any. It is probably most frequently seen in relation to circulatory disturbances. Welch, some years ago, studied this condition. He believed that the disease is the result of a disproportion between the working power of the left ventricle and of the right ventricle, of such a character that the resistance remaining the same, the left ventricle is unable to expel in a unit of time the same quantity of blood as the right. This, then, results in the excessive engorgement of the pulmonary system with the consequent œdema. Welch has found that this œdema could be artificially produced by pinching the left ventricle while the right ventricle was still in action, and also by reducing the lumen of the aorta. Both of these experiments are extreme ones, and such as probably seldom occur in life. Nevertheless, the feature of a disproportion of the output of blood from the right and left ventricles can easily be pictured, and no doubt occurs in some cases of heart disease. In the acute pulmonary œdema there is not alone an exudation of fluid through the capillaries of the lung, but also the loss of blood cells. Welch's theory has received some opposition, but, at the present time, his explanation appears the best. Since his experimental work, it has frequently been noted that by the injection of adrenalin, acute pulmonary œdema can readily be produced. It would appear in this instance that the great peripheral resistance, which is developed against the left ventricle, is cause sufficient to conform with Welch's theory.

To the many theories and explanations which have been advanced, there still remain numerous factors to be discussed. The laws of osmotic pressure, the difference between intra and extra-capillary pressure, the nature of permeability of the endothelial wall, the mechanism of absorption; all require much further study. To this might be added the question of potocytosis or the ability of the various tissue cells to absorb fluid. As these more minute points are not fully cleared up, we will not attempt a discussion at the present moment. It is probably true that with each form of œdema (cardiac, renal, obstructive, inflammatory), there is more than one factor in action, and that œdemas in general cannot be explained by any one individual cause.

Concerning these different œdemas, there have recently been several papers illustrating some of the experimental work on the subject. Pearce has studied the œdemas occurring with experimental nephritis. He finds that the kidney lesions produced by uranium salts simulate most closely the lesions as seen in the human.

Pearce has found some very interesting results following the experimental kidney lesions. When rabbits were treated with uranium nitrate, severe kidney lesions were produced, but no œdema followed. If, however, these same animals received excessive amounts of water by the stomach, œdema of the general tissues occurred.

On the other hand, when animals were treated with arsenic, which substance acts not only as a renal poison but also as a vascular one, œdema could be readily produced when the animals received large doses of water.

Again, in using ricin and venom, which substances act upon the vessel walls mostly, no œdema was produced, even when water was given in large doses. When, however, ricin and venom were combined with chrome salts, the latter producing renal lesions but no arterial ones, the œdema was readily produced on the administration of water. From these experiments it would seem that kidney lesions alone are not responsible for the various œdemas. With the kidney lesions there must be a concurrent vascular damage along with a condition of hydræmia.

Bolton studied the question of œdema from a different standpoint. He attempted to explain the œdemas occurring with heart diseases aside from kndney lesions. In his experiments, he used cats, and in them he produced various mechanical vascular disturbances. In different experiments the inferior and superior vena cava was constricted. During the experiment, the arterial and venous pressures were observed and also the onset of dropsy. He found that when the inferior vena cava was obstructed, the vessels became engorged, and within one-half to one hour after ligature, some ascites began, while the liver showed evidence of venous obstruction. If the obstruction was persistent, the venous anastomoses developed and the ascites diminished. Similarly, the obstruction of the superior vena cava led to an œdema of the mediastinum, the root of the neck and the thorax, but no ascites developed. When the portal vein alone was obstructed or narrowed, ascites set in very rapidly.

When the inferior vena cava was gradually constructed, the venous pressure rapidly rose, but the arterial pressure fell. It was found that the radicals of the inferior cava, particularly those of the mesentery, could contain an enormous amount of blood, and as this became stored

up, the arterial pressure was reduced gradually. In part, the arterial pressure was restored by the constriction of the arterioles. Besides this, the circulatory system attempts to restore the arterial pressure by the rapid absorption of fluids, and thus to increase the total blood quantity of the body.

This is also true in cases of uncompensated heart disease, where the total blood quantity is increased. While, however, the venous obstruction is limited to a certain area, and the arterial pressure falls in the remaining portions of the body, it is found that in the unobstructed areas no œdema occurs, but rather a depletion of the tissues takes place to compensate to a certain degree the low blood pressure. The arterial construction in the unobstructed areas has two effects, that of increasing the peripheral resistance and that of diminishing the capacity of the arterial system. Whether venous pressure is high or low, dropsy is produced in the congested area in which the blood flows with a diminished velocity.

At first sight it would seem that in the areas where the venous pressure is above normal, and the arterial pressure at normal, that the capillary pressure would be above normal. This need not be the case, for the increased resistance in the arteries with a relative high pressure, gives less blood to the capillaries than normal.

The author suggests two factors in the dropsy of venous stagnation: (1) Diminished absorption by the veins of the congested area, and (2) increased output by the congested veins. Besides this, there appears to be a direct relation between the velocity of the blood current in determining the production of œdema. In instances of diminished blood flow, certain changes are taking place in the vascular walls which admit of greater loss of fluid.

Fleisher and Loeb found that certain changes in the composition of the blood fluid had various effects on the secretory organs and also upon the production of œdema. Whereas, ordinarily, the intravenous injection of normal salt solution increased the secreting activity of different glands and the kidneys, this was markedly decreased when calcium chloride was added to the solution. With the decrease in the elimination of the fluids by the kidneys and intestines, there is also a concommitant increase in the transudation of fluid into the peritoneal cavity. This secretion into the peritoneum is in part associated with the diminished amount of urine secreted and may act quite independently of the kidney secretion. Whether the peritoneal secretion is due to an increased activity on the part of the endothelial cells is not determined.

In another series of experiments, they found that in performing the infusion experiments in any animal, when the rate of flow was very rapid, the ascites and œdema was more prone to occur than in cases where the infusion into the animal was slowly administered. They found, moreover, that when adrenalin was added to normal saline or normal saline with calcium chloride, both the quantity of ascitic fluid and the quantity of urine were increased, while the intestinal secreton was diminished. It appears, therefore, that in respect to the secretion of fluid into the peritoneum, the adrenalin assists the action of the calcium chloride to bring about ascites, but that, on the other hand, the adrenalin counteracts the action of the calcium chloride on the kidneys.

Animals in which experimental myocarditis had been produced showed a considerable decrease in the renal secretion. At the same time, however, the peritoneal transudate is not markedly influenced by myocarditic changes. The authors indicate that each of three factors—calcium chloride, adrenalin, and myocarditic lesions—effect the elimination of fluids from the kidneys, from the mucosa of the small intestine and from the endothelial lining of the peritoneal cavity in a specific way. The conditions influencing this elimination of fluid appears to be characteristic for each type of tissue. The authors do not throw much light upon the actual methods in which the increase or decrease of fluids from the vessels takes place. We should presume, however, that their experiments indicate the production of œdema by hydræmia, associated with true vascular changes.

O. K.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The eighth regular meeting of the Society was held Friday evening, January 21st, 1910, Dr. Grant Stewart, President, in the Chair.

PATHOLOGICAL SPECIMENS.

1. Typhoid Perforation of the Sigmoid.
2. Cancer of the Œsophagus.
3. Malignant Endocarditis.
4. Tumour of the Appendix.

W. H. Tytler, M.D., of the Royal Victoria Hospital exhibited these specimens.

A. Lapthorn Smith, M.D. One point interests me and that is about the appendix. I have written several papers urging that it should be removed when the abdomen is opened for other reasons, and Dr. Chip-

man evidently thought it justifiable in this case. Especially do I think that this should be done when there are adhesions, showing that it has gone through one or more attacks of inflammation.

W. Grant Stewart, M.D. Referring to Dr. Smith's remarks regarding the removal of the appendix when the abdomen is opened for other causes, I saw Stiler, of Edinburgh, and he had done 1,000 cases of the radical cure of hernia in young children and babies, and he makes it a rule in doing this operation at the same time to remove the appendix.

H. A. Lafleur, M.D. Caricinoma of the appendix is sufficiently rare to warrant a few remarks about it. Dr. Hamilton White presented a specimen of carcinoma of the appendix either last year or the year before. There are not, if I remember rightly, more than 30 or 40 cases recorded in the literature; in Nothnagel's System I think the collection does not exceed 30 or 40. It is almost invariably an accidental finding. There are very few cases operated on with the idea that one would find a carcinoma of the vermiform appendix.

SKIAGRAPHS OF TWO AORTIC ANEURYSMS, WITH REMARKS.

H.A. Lafleur, M.D. The first case is that of a woman of middle age; I first saw her on June 4th, 1909. She gave a history that for two years previously she had had a good deal of precordial pain which sometimes radiated to the left shoulder and down the left arm to the fingers. It was extremely severe lancinating pain and she mentioned that it was usually when she went to bed that she felt it most, and she had had very few hours sleep at night for some months. Apart from the pain she felt well and indeed looked quite well. She had absolutely no shortness of breath and walking never increased the pain. There was nothing very relevant in her previous history except that three months before she had gone through an attack of pneumonia very satisfactorily.

On examining her there was really only one point in the physical examination which caught my attention immediately. There was absolutely nothing to be made out on inspection, the chest was symmetrical, there was no pulsation to be seen except a slight cardial pulsation in the usual situation. Her radials were both palpable and equal, no pupillary changes, cardial dulness well within the normal limit. On applying the stethoscope towards the base of the heart I was struck by the peculiar booming, echoing character of the second sound. After I completed the examination I suggested that she come to the hospital and have an X-Ray picture taken. The result was the plate which I present here tonight; the picture was taken with the arms up. Here it is plain that we are dealing with an aneurysm involving the descending portion of the arch of the aorto which explained the severe pain very satisfactorily.

On careful enquiry no history of lues, either in the patient or in her husband, could be elicited.

The diagnosis in this case was suggested chiefly by two signs, a subjective one, the intense pain, particularly the nocturnal pain on lying down, and second, the booming, echoing character of the second sound. I put her on full doses of iodide and she is now quite free from pain.

The second case is more interesting and presents some features which may not be explained by the fact that this woman has aneurysm. She is a woman of middle life, 41 years of age, and I saw her first in the first week of October or the last week in September. Her complaints were that she had fainting spells with sensation of smothering in the throat. She is of American birth, but had lived in Montreal for 20 years. Had the ordinary infections of childhood, but up till last summer had enjoyed good health, in fact she did not recall any illness from 15 to 40. Her habits were decidedly bad; she was an excessive cigarette smoker, smoking from 30 to 40 a day, and for the last two years her allowance of champagne had been a quart a day. She had led a pretty easy life and appeared to be a woman fairly well preserved and apparently in good health. The acount she gave of her illness was that she was in New London in August, 1909, and complained of not feeling well during that month, was drowsy and tired, and one day when walking along the beach to the bath house she suddenly sank to the ground unconscious. She did not injure herself at all and in a few seconds was able to get up. The next attack of a similar kind occurred on the 15th of September in her own house here in Montreal. When she came to this time she found herself sitting on the floor; she had a good deal of headache. A few days later she had a similar attack, this time falling over the banister on her head and bruising herself severely. She had three more of these spells later on and, on September 21st, had half a dozen of these fainting attacks and then noticed some twitching of the face and hands. She called in a French-Canadian physician and he put her in the Homeopathic Hospital where she remained for some time, till the 26th of October. While in hospital she had several attacks but the interesting point is that these attacks never occurred while she was lying in bed. I saw her shortly after this and had her admitted to the Montreal General Hospital where she had two attacks lasting a very short time. These attacks are described by the nurse as chiefly being attacks of dizziness and then loss of consciousness for a short period; she had some pain in the cardiac region at the beginning of these attacks. Never in any of these attacks did she bite her tongue or micturate involuntarily.

What attracted my attention first was the fact that her radials and

ulnar arteries showed no pulsation whatever and I examined for this repeatedly, neither could a pulse be felt in the brachials. There was a feeble impulse in the sides of the neck. On the other hand, the femorals were very well felt and the pulsation of the posterior tibials, could easily be made out. Examination of the percordial area showed no visible deformity. There was nothing to be felt and the cardiac dulness as far as one could make out seemed to be within normal limits. The only suggestive thing was the very visible beating impulse as if the arch of the aorta was situated unusually high. No pupillary changes. On auscultation the same feautre as in the previous case was noted, not only accentuation of the second sound but a peculiar booming quality. Here, again, I thought an X-Ray picture might possibly be of assistance. Here one can see the shadow distinctly. I could elicit no history of lues. I put her on pretty large doses of iodide and this had the effect of diminishing the frequency of the severe attacks a very great deal; she often goes a whole week without an attack.

The symptoms here might possibly be conceived to be epilepsy, possibly of alcoholic origin in the presence of the marked abuse of alcohol. But they seemed to me to be rather analogous to the peculiar syncopal attacks which one sees in the Stokes-Adams syndrome, and my impression is that the supply of the blood to the brain is always below par and that under conditions of greater exertion possibly through a valve-like action at the roots of the vessels the blood is still more cut off from the brain and hence anæmia accompanied by syncopal attack with the more or less epileptiform features. I have not tried bromides, but she has made a substantial improvement on the iodide. This is the only case of aneurysm I have met with in which I have seen such attacks—they are syncopal with epileptiform features.

In the first case the aneurysm is not very large and it would be hard to be sure of this without an X-Ray examination though the character of the auscultation sound points that way. While she was being photographed under the X-Rays I could see the slightest little impulse to the left of the sternum high up involving the left sterno-articulation, which in itself was suggestive of the underlying vascular tumour.

C. F. Martin, M.D. In view of the very beautiful X-Ray pictures which aid the diagnosis here it is very suggestive, to anybody who works with the fluoroscope, of the value of these means of diagnosis. So useful does it seem to use the fluoroscope in the diagnosis of diseases of the chest that I can recall more than one case in old individuals in which examination by the fluoroscope revealed that the bronchitis was due to some neoplasm or aneurysm as the case may be. An inter-

esting feature that struck me in Dr. Lafleur's cases was the fact that the fluroscope is so useful in making diagnosis where the physical signs are so obscure. The pictures shown here are excellent because in stout people it is very hard to get a clear picture though Dr. Lafleur has succeeded admirably.

H. A. Lafleur, M.D. We are indebted to Dr. Walter Wilkins for these excellent X-Ray pictures. We have every reason to congratulate ourselves in having him in our X-Ray Department at the Hospital.

SOME CONSIDERATIONS BEARING ON THE SURGEON, THE PATIENT, THE STUDENT, AND THE NURSE.

Wesley Mills, M.D.

SHOULD ECLAMPTIC MOTHERS NURSE?

J. R. Goodall, M.D.

J. C. Cameron, M.D. This is a very valuable communication indeed, one deserving careful study, and the question submitted by Dr. Goodall is an important one. Eclampsia has been called a "disease of theories." At present the general concensus of opinion seems to be that it is a toxæmia; but when we come to consider what is the nature and origin of the causative poison or poisons, we have many theories but as yet we know really very little. That toxines do pass through the placenta has been demonstrated time and again; that they may pass out through the milk and may produce unfortunate results seems now to be equally certain; but that the fatal toxæmia in Dr. Goodall's cases is to be attributed solely to the milk is an open question. Is it not possible that the child was previously infected *in utero* through the placenta, and that after birth the infected milk being superadded became the last straw and determined the fatal issue?

Again, that in some women toxines may pass over to the child in the milk we must admit, but that they so pass over in all women, or that they always do so to an injurious extent, we are not at all prepared to admit. If we consider how greatly the function of lactation varies in different women, how variously nursing women are affected by what they eat and drink, how some can take the most extraordinary things without apparently affecting their milk or hurting the child, while others cannot take even an orange or a lemon or vegetables without causing colic in the child, we must admit that there must be a great deal in the constitution of the woman herself. We find the same thing happening among the lower animals, the cow for instance; when certain vegetables or distillery products have been fed to cattle, the milk of some cows has been found to be actually poisonous, while that of others seems to have been little changed or only slightly modified. The cause of the disturb-

ed milk function in some cases seems to be more in the cow herself than in the food she has taken. Dr. Goodall asks, Should eclamptic mothers be permitted to nurse their children? In medicine it is very seldom that we can lay down such stringent rules as "Never do this," or "always do that." Circumstances alter cases. With regard to the advisability of nursing in such, it seems to me that we should ask ourselves two questions, first, "Is there any great good to be gained by nursing either for the mother or the child," and second, "Is there any risk?" If there is no great good to be gained, and if there is any risk, it seems to me that it is more prudent not to take the risk.

In eclampsia our aftertreatment consists chiefly in flushing away and getting rid of the poison, and in aiding nature to eliminate it as soon as possible. We rely chiefly upon purging, sweating and forced fluids to attain this end, and may not lactation provide another outlet for the toxines, form another means of excretion? Certainly such a supposition seems reasonable. A great deal depends upon the severity of the eclampsia and the time of its occurrence. In Dr. Goodall's first case, a postpartum eclamptic, the nursing took place before the fit occurred. Here the blood of the mother must have been laden with toxines, as proved by the subsequent eclamptic attack. I do not think that we should make the same rule apply to a case in which there is only one convulsion, or where the toxæmia is very slight, as we would do to those cases where the fits are numerous or the toxæmia severe. At the Montreeal Maternity, so far we have had no bad results from nursing. I may say, however, that most of our eclamptic cases have been difficult ones. Most of the women have been very ill indeed, many premature, most required to be bled, many to be delivered rapidly by artificial means, and all have been given forced fluid treatment for 4, 5, 6, and even 10 days. Under such circumstances a woman does not secrete milk at first, she is too ill to nurse, and the tendency would naturally be to keep the child away from her for some time. As a rule we put the child to the breast about the 5th or 6th day, the woman not seeming fit to nurse before that time, giving her time to eliminate a great portion of her toxines and get fairly back to her normal state. How then are we to answer Dr. Goodall's question "should an eclamptic be permitted to nurse her child?" I would answer it in this way, that it is not prudent for an eclamptic mother to nurse her child until she has returned to a fairly good condition of health, that is to say, until her eliminative organs have had an opportunity to right themselves and the toxines have been pretty well swept away. In one woman this may take two or three days, in another perhaps a week or longer; and I should certainly say that until the albu-

min has been much reduced and the quantity of urine increased, it would be imprudent for her to nurse.

W. W. CHAPMAN, M.D.

These cases cited by Dr. Goodall certainly illustrate very clearly the grave danger that may arise to the child from nursing an eclamptic mother. The rule that is followed, in such cases, in the Edinburgh maternity hospitals, is I think a good rule. It is this: A distinction is drawn between albuminuric women and eclamptic women. An albuminuric woman, even if she show œdema of the feet, hands or face, may nurse her child provided only she evince no eclamptic symptoms. Should she, however, show any of these latter sypmtoms, for example, headache, vision-disturbances, epigastric pains, extensive nervousness or muscular twitchings, the nursing of her child is denied to her, until at least these manifestations of the toxæmia have disappeared.

The above affords us, I think, a safe clinical rule to follow in these cases. It is, of course, based upon the opinion that the condition of the mother's milk is to be judged not so much by the urine-judging in these instances as upon the presence or absence of any manifestation of the symptom-complex of eclampsia; the patient's toxæmia and the consequent toxicity of her mammary secretion is more correctly reflected in the so-called eclamptic signs and symptoms, than by any chemical analysis of the urine.

Mere albuminuria unaccompanied by any toxic signs or symptoms does not contra indicate lactation.

D. F. GURD, M.D. I have been very much interested and even startled in hearing these cases to-night as they do not correspond at all with my experience. I have had some 12 cases of eclampsia, some very severe and others tolerably so; one in a little lady who had twins. In this case the convulsions lasted many hours. I removed one child by forceps and the other by the feet and she nursed her children without any apparent effect on them. They both grew up and are alive and well. In looking over several others I have not had one case correspond with any such as Dr. Goodall has described. I have had one or two born dead, and one where the child lived three weeks, but here there was some malformation. One interesting point was that these children of Dr. Goodall's died before the breast function had been well established. In one of my recent cases the mother began her convulsions about 5 in the morning and continued till 11 o'clock at night, dislocating her shoulder in one of the spasms and she nursed her child with no ill effects.

J. C. MEAKINS, M.D. In relation to what Dr. Fry has said as to whether drugs pass over from the breast to the infant, I had an oppor-

tunity of studying a case of gastro-enteritis in a child at the breast of an apparently healthy mother. The child was admitted into the children's ward of the Presbyterian Hospital, New York, suffering from a very intense gastro-enteritis. On going over the history of the case I found that the mother had been on small doses of the liquor arsenicalis. I examined the secretions of the breast of the mother and I found the secretions gave a very marked reaction for arsenic. I have examined the breast secretion from a patient on urotropine and it gave a marked reaction for formalin, showing that urotropine after it had been broken down in the body will be secreted in the milk as formalin, the same as in the urine, bile and cerebro-spinal fluid.

W. Grant Stewart, M.D. My experience in the last twenty years coincides very much with Dr. Gurd's. I have never had any case such as Dr. Goodall has reported. Certainly, after this, I think I would be perhaps a little more careful about putting the baby to the breast in such cases. I think, however, in the first few days in these cases there is very little milk. I have a case at the present time, a patient who has had an eclamptic attack and for the first few days she had no milk at all; I put the baby to the breast after a few days and he is now alive and well. With regard to the passage of drugs through the milk I have just had a very interesting case of a lady who was recently confined. I put her on a mixtu re of Ferri Ammon Cd. ʒvi, nux vomica ʒiii, syrup of orange ʒip and maltine 16 oz. ʒphd pc., and after she had been taking this for a day or so her baby slept for several days and finally looking for the cause we thought that the medicine had something to do with it and on stopping it the child became normal again. I have very often given morphine for after pains and I have never had any difficulty with the baby and I have given it hundreds of times.

J. R. Goodall, M.D. I have just a few words to add. I think the difference arises out of the one factor that in the great majority of cases the eclamptic seizures are before labour or immediately after, and under those conditions the toxines are soon eliminated from the system before the secretion of milk has started. In the two cases I reported the eclamptic seizures came on in the second or third day and in the third case she had a tremendous amount of albumin in the urine and she still has albumin.

The ninth regular meeting of the Society was held Friday evening, February 4th, 1910, Dr. W. Grant Stewart, President, in the chair.

PATHOLOGICAL SPECIMENS.

A. Lapthorn Smith, M.D., exhibited a lacerated cervix which he had

removed by his method from the posterior lip of which two large polypi were hanging. They had the effect of pulling down the uterus and causing great distress to the patient. One of the polypi was deeply ulcerated and bled freely when bruised by sitting on it or bruising by the clothing. The other polypus contained a large mucous cyst.

(1) LIPOMA OF SPINAL CORD AND (2) MALIGNANT STRUMA.

S. B. Wolbach, M.D. The excuse for offering the case of the spinal cord is first of all its great rarity, and secondly, because of the association of the congenital tumour with other congenital defects. The case is that of an infant of ten months with complete cleft palate. It was a well nourished infant and was taken to a Foundling Asylum to be cared for. and there died, apparently from acute gastro-intestinal disease. We were unable to get any history as to paralysis though the attendants, who were not trained, said there were no symptoms relating to the central nervous system. At autopsy there was a considerable degree of internal hydrocephalus and complete absence of the right kidney so that we had two congenital defects, cleft palate and absence of one kidney. The spinal cord was greatly enlarged symmetrically, and there were two tumours at the base of the brain, one at each cerebellar pontine angle, and a third on the dorsum of the medulla. All these tumours and the diffuse enlargement of the cord were found to be due to a growth of fat—subdural lipomata. The case is unique in the extent of the growth and the absence of spina bifida or spina bifida occulta which was absolutely ruled out in this case. The terminal filament was invested with an unusual fatty growth. In the drawing the gross appearance of the spinal cord shows simply an enormous cord for an infant of that age, with certain irregularities. On cross section it was white and had exactly the appearance of a fresh section of fish muscle. The accompanying micro-photographs show the relation of the tumour to the cord. The preparations are osmic acid preparations so that the tumour itself appears black.

The other case was that of an elderly man who for about five years had been treated for aneurysm, or at least watched with that diagnosis He had a tumour of the chest, bulging of the upper portion of the sternum, and the clinical signs were such that an eminent diagnostician in New York made a diagnosis of an aneurysm of the arch of the aorta. This diagnosis, however, was combatted by an Albany physician who maintained that there was a mediastinal tumour. The patient got along with pretty fair comfort until towards the end, when he developed a complete paraplegia and, of course, retention, cystitis, and death, immediately due to pyelonephritis. At the autopsy the manubrium of the

sternum was filled with a large tumour mass; it was entirely replaced so that it was surrounded only by periosteum. There were a number of small metastases in the lungs, two solitary metastases in the liver each about 1 cm. in diameter. On removing the spinal cord a large tumour mass was found either in the 10th or 11th dorsal vertebra which pressed upon the spinal cord and accounted for the paraplegia. When the organs of the neck were dissected out there was found a tumour of the thyroid. This was not very large but the trachea was invaded, and what is more interesting the internal jugular was invaded so that there was a knob of tumour tissue projecting into the superior vena cava. Histologically all portions of the tumour and the metastases showed the structure to be practically that of normal thyroid tissue, at least there is no more indication of malignancy than in colloid hypertrophy of the thyroid. The condition is a very rare one but a well recognized condition, which has led to a great deal of discussion as to what constitutes malignancy. Some pathologists say that these tumours are simply metastases of normal thyroid tissue. That, however, has been quite well disproved and the belief is that they all take origin from small tumours of the thyroid. A few cases are on record where no tumour of the thyroid could be found, but in this case we had this tumour. The interesting features are the long duration of the disease, the extensive transplantations to bone, and the structure of the tumour, which is astonishingly like that of normal thyroid gland.

CASE REPORT.—TRACHOMA BODIES.

HANFORD MCKEE, M.D.

DR. H. L. PAVEY.. It appears to me that it would be a great step if the cause of "trachoma" could be found out and the disease prevented. We all know what a common disease "trachoma" is and we have learned to regard it as a contagious affection.

As I was ship's surgeon for some months on a transatlantic liner I was enabled to see this disease frequently and was struck with the vast amount of suffering it gave rise to and with the careless manner in which some of the examing officers handled the eyes of the immigrants.

Many foreign families came to Liverpool to emigrate to this side of the water, and it was a frequent sad sight when one or two members of the family would be refused passage owing to "trachoma," while the others would be hustled aboard. The eyes of all applicants for passage were examined carefully for "trachoma;" and naturally many bad cases were found. Yet these examining officers after everting the superior tarsus of a case of "trachoma" would proceed without any attempt at sterilization of the hands to the examination of the eyes of other ap-

plicants. It seemed to me that they could thus infect healthy eyes which would, perhaps, not develop "trachoma" until they reached this side of the water. If this be the case we are doing more harm than good, for we may, it is true, find a few cases and refuse them passage, yet we may at the same time inflict many other unfortunates who would be settled in Canada before they showed well marked granulation. Something should be done to prevent infection in this way.

THE BOARD OF HEALTH IN CONNEXION WITH INFECTIOUS AND CONTAGIOUS DISEASES.

J. E. Laberge, M.D., read the paper of the evening which appears in February number of the Journal.

E. J. C. Kennedy, M.D. I would just like to say we all appreciate what we have heard from Dr. Laberge to-night. Quite a number of us do not know what is going on in the City Hall, and to have him come here this evening and lay the work of his Department before us is certainly of very great interest. Dr. Laberge has said that notification of contagious diseases is not made by many medical men in Montreal. I believe that the explanation of this oversight on the part of the profession is due to the fact that it is impossible to communicate with the Contagious Diseases Department by telephone. The line is always engaged, and one may ring up several times without being able to get a hearing. When this is remedied notification will be found to be the rule instead of being the exception.

In reference to the medical inspection of the different institutions in Montreal, it is stated that it is not satisfactory; there is no doubt that under the new conditions existing at the City Hall, some improvement could be inaugurated. At the present time the work of the Medical Inspectors is too varied to get proper results. Their time is divided between attention to professional practice and inspection. It should be possible to have inspectors who would give all their time to the work, and specialization might be introduced. Some could give their attention to the examination of school children, others to factories, while others could investigate contagious diseases, and devote most of their time to these duties. We owe a great deal to Doctor Edward Laberge for the manner in which he has organized the Department of Contagious Diseases at the City Hall, and I am sure it is our wish to assist him all we can.

A. D. Blackader, M.D. I have listened with interest to Dr. Laberge's statement of the work carried on by the Contagious Diseases Department at the City Hall, and notice with much pleasure the

improvement in the character of the work that has taken place during the last few years. There are, however, a few points upon which I desire to say a few words. It is all very well for the Health Department to say that they expect physicians to report contagious diseases within twenty-four hours, but in a large city like Montreal, may not physicians look to this Department for assistance in the bacteriological work necessary for the diagnosis of difficult cases. In the case of typhoid fever, it would be of much assistance if the Department could give us a report on the presence or not of the Widal reaction. This is almost invariably necessary before a case can be reported as definitely typhoid fever, and I think the Health Department should, for our poorer patients at least, do this work for us.

A bacteriological investigation is desirable before a case can be reported as one of definite diphtheria. To render such an investigation easy for the physician culture-tube outfits should be readily obtainable by the physician. It appears to be desirable that the Health Department should make some effort to supply fresh culture-tubes to the more important drug stores, which would be available on the request of any physician, and take measures to have a report on the presence or not of the Lœffler bacillus returned to the physician within twenty-four hours. In this way the physician could feel sure that he was dealing with true diphtheria and take steps for such isolation as may be necessary.

In connexion with the disinfection of houses, it is important also. that officers inspecting infected houses, should carefully disinfect themselves before going from one house to another. I have on several occasions received bitter complaints that the inspectors made their visits without taking sufficient precautions for the careful disinfection of their own person after each visit.

Again, physicians have also much difficulty in obtaining telephone connexion with the Contagious Department at the City Hall. It would add much to the ease of reporting infectious cases, if the Contagious Department had a number for itself, which could be easily found in the telephone book. I have frequently found it difficult to obtain telephone connexion with the Department.

F. R. England, M.D. There are just two points I would like to mention. For many years I have observed that after the Medical Health Officers come to a house and get this, what is doubtless valuable information for statistical purposes, they go away and if the patient elects to stay at home nothing is done to prevent the spread of the disease until the case is cured, that is to say, nothing is done until after fumigation.

Now this system could be improved upon, e.g., if a defective drain exists it should be remedied at once and not allowed to remain until the case recovers. I would also like to know what course is adopted when a contagious disease is known to exist in a house, to prevent other members of the household from continuing their work and going about spreading the contagion. We report a case at present of contagious disease and leave the "precautions" in the hands of the Health Department. I have often found difficulty in controlling the different members of a household and fear that under existing conditions there is a serious division of responsibility between the attending physician and the Health Department.

G. P. Girdwood, M.D. One point which strikes me is in Section 51 which requires that persons having charge of an infectious case had to notify the Health Officer within so many hours that they had charge of such and such a case. The physician in that section is bound to notify the Health Department in so many hours as to what is the situation of the person, who is the employee of some firm, and one of the inhabitants of that house who still attends his duties in his employer's office where there may be from 10 to 100 employees. What is the duty of that employer when he becomes acquainted with the situation? What can the Health Department do in those cases where such on inmate of such a house goes to his employment, and does not notify his employer of the disease in his house. I think it would be a good thing if we could get some responsibility laid upon such persons coming from houses where there is a case of infectious disease so as to protect his fellow employees.

D. F. Gurd, M.D. This address shows that we have an admirable head for our Contagious Diseases Department, and I think if we were to back him up more we would be able to get a civic bacteriological laboratory. The curious rule of not examining and testing the drains of a house till after fumigation, struck me as being absurd for the reasons given by Dr. England. Some years ago I wrote to Boston and New York and asked the authorities what they did there. In Boston they test the house as soon as the disease is reported; in New York they do as we do here, wait till after fumigation. Dr. Laberge mentioned that in all probability the water was the cause of the recent epidemic of typhoid fever in our city. There is no doubt about it. The water supplied by the Montreeal Water and Power Co. has been the cause. The municipalities and wards of the city supplied from this source have had for years past as well as this year immensely increased numbers of cases of typhoid whilst the part of the city supplied by the Montreal water works

have had no increase. It is an amazing thing that this has been allowed to go on so long. During my time as a practitioner in Montreal we have had two epidemics of typhoid fever traceable to milk supplied by two dairies. They were promptly stopped from selling any more milk till the Health Department was satisfied that the cause had been removed.

F. G. FINLEY, M.D. The great difficulty that the Contagious Diseases Department have to contend with is that physicians as a class do not report their cases sufficiently often. I think if the authorities would follow the example of Glasgow and pay a small fee for each case reported it might be of service in bringing them to time. I would like to ask Dr. Laberge what steps are taken in tracing typhoid to milk. It seems to me that it is the duty of the health officers to follow up the milk supply and see if the disease follows the route of any special milkman. I was very much struck recently in reading the report of the District of Columbia health authorities. They had a number of cases of typhoid there and began to trace the milk supply, and found the disease limited to the route of two milkmen. After investigation they found that it originated in one woman who handled the milk on a certain farm, she had had typhoid fever 18 years previously and bacilli were found in her stools.

DR. HART. There is one little point to which I would beg to draw Dr.. Laberge's attention, and that is with regard to the reporting of cases to the Health Department by telephone. It has occurred to me several times, when I have had occasion to call up the Contagious Disease Office, to be told that the line is engaged. I think it would simplify matters a great deal for medical men, especially the busy ones, if the department were to put in two or three instruments, so that reports would have some one to receive them at once. It may occur, and probably does, that if on the first call, a doctor finds the line busy, and on a second call is again told that the line is busy, the report is not made at all, or postponed for a day or two, especially may this be so if the cases to be reported are measles, whooping cough, &c., &c.

W. GRANT STEWART, M.D. I would like to ask Dr. Laberge whether they do here as in Edinburgh; they have a laboratory which examines all the specimens of the infirmary and city and all the surrounding country, and all the doctors from the country around send in specimens of sputum, swabs from throat cases, specimens of fæces, gastric contents, etc., for examination and report. I would like to ask Dr. Laberge whether they do that sort of thing in the city laboratory or whether such a thing would be feasible. Another point is the matter of stations all over the city where one could get culture tubes, etc. The late Dr.

Wyatt Johnston started a scheme of this sort where one could send specimens and get a report next day.

J. E. Laberge, M.D. Certainly we need a bacteriological department at the City Hall to be put at the disposal of medical men in Montreal who may want to have diagnoses made in cases of diphtheria, etc., or to find out if a sputum contains the tubercle bacilli, to have a Widal test made, etc., etc., to aid in diognosis. Years ago when I was in charge of the Health Department that was done, but this department was taken out of my hands and I have no control of it. Under the new administration, however, it is possible that this may be re-established. The employees who go into infected houses from the Contagious Department should always wear a gown when they go into a house and should take it off before they leave; they should also wash their hands and face, as that is their instruction. With regard to the telephone we have only one telephone for the infectious department and that is going almost all the time. I have asked many and many times that another be installed but I am always told that there is no money for this improvement. When a case of infectious disease is in a house and there is a defective drain. the duty of the inspetor of the City Hall is to find out the defect, not to remedy it. The plumbers are allowed to go into the house only when the infection is gone. We may make an exception, but as a rule we only do this reparation to drains when the infection is over. When a house is placarded for a case of infective disease the people are not allowed to go outside unless the patient is properly isolated and the physician in charge of the patient assures us that this precaution has been taken. We try all the time to induce these people to go to the hospital, but in case they refuse the City Hall does not supply them with food. and in poor families the father has to go out to work, so that I do not think we can do better than induce them to go to hospital.

As to the typhoid fever nearly all our cases, between October 1st and the end of January, were from the following wards: St. Henry, 441; Ste. Cunegonde, 159; Delorimier, 77; St. Denis. 235; Mount Royal, 9; West, 5. Centre, 5; East, 13; St. Mary, 61; St. Jacques, 4.; Hochelaga, 62. For the first week in January 204 cases were reported, the second week 186, third week 50, fourth week 89.

The tenth regular meeting of the Society was held Friday evening, February 18th, 1910, Dr. W. Grant Stewart, President, in the chair.

Dr. W. H. Tytler exhibited the following specimens:—

1 CANCER OF THE GALL BLADDER. 2. INTUSSUSCEPTION.
3. MESENTERIC THROMBOSIS.

Dr. A. Lapthorn Smith also showed specimens from three cases of tubal pregnancy.

J. Appleton Nutter, M.D.

1. CURE OF SACRO-ILIAC STRAIN, SHOWING TREATMENT EMPLOYED. 2. TENDON TRANSFER, PERONARAL GROUP MADE TO ASSUME ROLE OF THE CALF MUSCLES. 3. CURE OF DOUBLE CONGENITAL CLUB-FOOT.

A report of these cases appears in this number of The Journal.

The cases were discussed by Dr. A. E. Garrow, Dr. W. G. Turner and the President, Dr. Stewart.

W. S. Morrow, M.D., read the paper of the evening which included the following:—Rythmic tissue in the primitive heart; normal heart rhythm; the auriculo-ventricular node, sometimes the seat of extra systoles, and sometimes assumes the cardiac rhythm (nodial); frequency of nodal rhythm; diagnosis; prognosis; treatment.

This paper was discussed by Dr. F. G. Finley, Dr. W. F. Hamilton and Dr. A. Lapthorn Smith.

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THE EARLY HOSPITAL HISTORY OF CANADA, 1535-1875, A. D.

BY

M. LOUISE MEIKLEJOHN.

I. *French Régime.*

The early hospital history of Canada is the history of the country itself; it is the tale of heroism and of martyrdom, of Indian massacre, of famine, fire and pestilence, of colonization, of war and of civilization.

The houses of the sick in this country, as in older civilizations, were called *Hotel, Hospice, Hôpital,* without discrimination, and each one endeavoured to fulfil the combined mission of modern institutions bearing the same names.

In the earliest days of the country they were built of logs, the chinks filled in with clay, the rooms planked and the roofs covered with bark. They were of necessity surrounded by palisades and fortified with cannon, for, "in all Canada, no man could hunt, fish, till the fields, or cut a tree in the forest without danger to his scalp. The Iroquois were everywhere and nowhere. A yell, a volley of bullets, a rush of screeching savages—and all was over."

The immediate neighbourhood of these primitive houses of the sick was utilized for a burying-ground, where the nuns themselves interred those of their order—and they were many—who did not survive its hardships. Here also were buried the hospital sick or any others who died in the colony. Nearby was to be found the vegetable garden and barnyard, which, too frequently, constituted their only source of subsistence. In describing the two chief communities, Parkman says: "It is difficult to conceive a self-abnegation more complete than that of the hospital nuns of Quebec and Montreal. In the almost total absence of trained and skilled physicians the burden of the sick and wounded fell upon them.

Of the two communities, that of Montreal was the more wretchedly destitute, while that of Quebec was exposed, perhaps, to greater dangers. The nuns died, but they never complained. Removed from the arena of ecclesiastical strife, too busy for the morbidness of the cloister, too

much absorbed in practical benevolence to become the prey of illusions, they were models of that benign and tender charity of which the Roman Catholic Church is so rich in examples."

The first white man to behold Quebec was Jacques Cartier, the Breton Navigator, who spent the Winter of 1535 on the banks of the St. Lawrence under terrible conditions. On the banks of the St. Charles he planted the symbol of the Christian religion, and the following spring he returned to France with the few of his company who had survived the scurvy. In 1541 Jacques Cartier again visited Canada, taking shelter at Cap Rouge, where Roberval had previously fortified himself in a vain attempt to establish a stronghold.

With the passing of Cartier and Roberval, a silence, lasting over half a century, fell upon the whole region from Stadacona to Hochelaga. Even the Iroquois abandoned their villages. Sixty years later, when Champlain sighted Cape Diamond, he found only solitude and the ruins of the fort left by Cartier. In this year, 1608, Champlain laid the foundations of the City of Quebec. The first building was called "l'Abitation"; it was erected on the river-front, near the site o the present church of Notre Dame des Victoires, and it served as a temporary residence for the Governor as well as for a store-house for supplies from France and for furs bought from Indians. An original drawing of l'Abitation by Champlain's own hand still exists and has been reproduced in his works.

With Champlain's company was a doctor named Bonnerme, who died within the year (1608) of either scurvy or dysentery.

Up to 1615 the colony consisted of the fortified post and a few cabins about the palisades; the entire population was less than fifty persons, chiefly traders, for the fear of death unshriven contributed to tentative settlement only.

During this year Champlain re-visited France and brought back with him four Recollet Friars, who speedily raised their altar and celebrated the first Mass ever said in Canada.

Soon after the arrival of the priests, the first settlers with their families came to Quebec. Among them were Abraham Martin (after whom the Plains of Abraham were named), Pierre Desportes, Nicolas Pivert, and Louis Hébert, an apothecary, who followed Champlain from Port Royal.

It is interesting here to note that the first resident medical man of whom we find authentic record was Adrien Duchesne, a surgeon of Dieppe. He must have emigrated previous to 1620, since in that year he was among the residents to meet Madame Champlain when she reached Quebec.

Duchesne appears to have enjoyed a monopoly of the practise from Quebec to Three Rivers, for a period extending over several years.

The year 1621 is marked by the building of the Recollet Convent on the banks of the St. Charles, destined later to become the General Hospital of Quebec. In 1625 three followers of Loyola joined the colony.

The next important acquisition was the surgeon, Robert Giffard, who, with his family, arrived in 1627. He later became the first visiting surgeon to the Hotel Dieu; he was evidently the medical authority in the settlement and must have been a man of importance in his own country, since he was followed to Canada by over three hundred families from Perche and Normandy.

When, on the 19th July, 1628, the British, under Sir David Kirke, took Quebec, Champlain was conveyed to England, both Recollets and Jesuits were sent back to France, among other prisoners taken was Giffard. By the Treaty of St. Germain-en-Laye, in 1632, Canada was restored to the French. That year the Jesuits returend, also Surgeon Giffard, and the following year saw Champlain return as Governor of the colony.

In 1634, Giffard was granted the Seigneury of Beauport, where he built a substantial stone residence, which place, more than two hundred years later, became the Beauport Asylum.

Giffard, after playing an important rôle in the settlement of the colony, died in 1668. By 1635 Quebec was only a village, with a few houses. Eighty persons, including the clergy, constituted the population.

At this time the Letters, or "Relations" of Father Le Jeune, the Jesuit Superior, who had joined the colony with others of his order in 1632, were exciting wide-spread interest in France. They were passed from hand to hand in the Court, universally discussed in ecclesiastical circles, and the conversion of the savages had become a popular subject for prayers, devotions and fasts.

With the acumen which has ever characterized his order, Le Jeune saw far into the future. He wrote: "If we had a hospital here, all the sick people of the country and all the old people would be there. If a monastery like Dieppe were in New France, the charity of the Sisters would do more for the conversion of th savages than all our journeys and all our sermons."

In response to this appeal, the Duchesse d'Aiguillon, niece and heiress of Cardinal Richelieu, lady-in-waiting to Queen Marie de Médicis, resolved to establish a hospital in New France. The Duchesse and Richelieu together gave 22,000 livres for this purpose.

They obtained in 1637, from the Company of One Hundred Associates,

a concession of eight arpents of land in Quebec for a monastery, and a fief of sixty arpents called Ste. Marie, outside the settlement. Six workmen were immediately sent from France with orders to clear the land and prepare for building.

Under the guidance of her spiritual adviser St. Vincent de Paul, the Duchesse d'Aiguillon proceeded to the Hotel Dieu at Dieppe. This institution had been founded in 1155; it was controlled exclusively by the Sisters of St. Augustin, the oldest purely nursing order of nuns in existence; they had rigid rules, were entirely responsible to the clergy, and were practically cloistered.

From this Community three young nuns were chosen by ballot to sail to New France to open a Hotel Dieu under the direction of the Jesuits. The Sisters were to be called " Hospitalières de la Miséricorde de Jésus."

On the morning of the 4th May, 1639, some Ursuline nuns from Tours, with Madame de la Peltrie, joined the Hospitalières at Dieppe. They, too, were coming to New France. Together the Communities attended Mass that day and said farewell to their native land, and together they embarked for the New World.

After an eventful voyage, they reached Quebec on the 1st August. At the water's edge the entire populace, with Montmagny, the Governor, met the Sisters. The Hospitalières, who take precedence of all other communities, stepped ashore first, followed by the Ursulines and Madame de la Peltrie, their Canadian foundress. The little procession walked up the hill (now Mountain Hill) to the Church of Notre Dame de la Recouvrance (burned 1640), where a thanksgiving service was held. The Hospitalières were received into a house in the Upper Town, owned by the Company of One Hundred Associates, and the Ursulines walked back down the hill to take shelter in a rude building on the wharf, where they had landed.

The next day the Sisters inspected their land. The workmen, who had been sent from France months before, had not arrived; the land was swampy and overgrown with brushwood; to clear it and erect a building before winter would be impossible. Therefore, they decided to remain where they were already housed, and they accordingly set out such stores and furnishings as were available.

Hardly were their beds set up, than the Indians, among whom small-pox was prevalent, arrived in such large numbers that temporary sheds and wigwams were put up for them around the nuns' house. The mortality among them was great. The disease increased. Winter, with all its hardships, was upon them. Water was no nearer than the river below the cliff; for meat they were dependent upon *l'orignal* (moose), which

the Indians brought in from the hunt. Clothing there was none. The dead Indians' furs were kept to cover the sick. Finally, all three nuns succumbed to illness, and the Jesuits had to take their place in caring for the sick. Smallpox raged throughout the cold weather, and every disease incident to filth followed. To add to the difficulties of the Sisters, the Indians became troublesome and dissatisfied, and called the temporary hospital "the House of Death."

Towards Spring, finding the hills too steep to carry up their canoes, the savages removed themselves to Sillery, three miles distant. When in their own villages they found the smallpox had carried off even more victims than in "the House of Death," they returned, penitent, to beg the Sisters to remove also and take up their abode in a house near Sillery, which had been erected by Noël de Bruyard, a Knight of Malta. The Hospitalières decided to await the will of their foundress in this matter. At this crisis, however, the temporary hospital was mysteriously burned, so forcing the nuns to avail themselves of the offered shelter at Sillery. Here they attended the needs of the sick and the aged and taught the Indian children.

The next Winter there was so much scurvy that their house and neighborhood was again over-crowded with the sick, and even the chapel was filled. In visiting filthy Indian wigwams, the Sisters' white habits became hopelessly soiled, and they obtained permission to dye them with butter-nut juice.

While these Quebec nuns were working out a perilous existence, strange things were happening in France. At La Flèche, in Anjou, dwelt one Jerome le Royer de la Dauversière, receiver of taxes. One day, while at his devotions, he heard an inward voice commanding him to become the founder of a new order of hospital nuns; he was further ordered to establish on the island called Montreal, in Canada, a hospital or Hotel Dieu, to be conducted by these nuns. But Montreal was a wilderness, and the hospital would have no patients. Therefore, in order to supply them, the island must first be colonized. Dauversière was greatly perplexed.

Again, there was at Paris a young priest, Jean Jacques Olier, afterwards widely known as the founder of the Seminary of St. Sulpice. He was praying in the ancient church of St. Germain des Près, when, like Dauversière, he thought he heard a voice from heaven, saying that he was destined to be a light to the Gentiles, that he was to form a society of priests and establish them on the island called Montreal, in Canada, for the propagation of the true faith. While both he and Dauversière were totally ignorant of Canadian geography, they suddenly found themselves "in possession, they knew not how, of the most exact details

concerning Montreal, its size, shape, situation, soil, climate and productions."

They met one day at Meudon, near Paris, as if by a miracle, ecstatically embraced like old friends, called each other by name, and took a walk in the forest nearby to communicate the details of their visions and to suggest plans for their fulfilment.

They proposed to found at Montreal three religious communities:—one of secular priests, to direct the colonists and convert the Indians; another of nuns to nurse the sick, and a third of nuns to teach the Faith to the children, white and red.

But, first, they must make a colony, and to do so must raise money. Olier had pious and wealthy penitents; Dauversière had a friend devout as himself and far richer, who, anxious for his soul and satisfied that the enterprise was of God, was eager to bear part in it. Olier soon found three others; the six together formed the germ of the Society of Notre Dame de Montreal.

Among them they raised the sum of seventy-five thousand livres (equivalent to about as many dollars at the present day), and then they secured the title to the Island of Montreal.

The title assured, they took steps to put their plans into operation. First, they would send out forty men to take possession of Montreal, entrench themselves and raise crops; then they would build a house for the priests and two convents for the nuns. Meanwhile, Olier was to inaugurate a seminary of priests, and Dauversière to form a community of nuns in France.

The company was soon formed. It was composed of forty-five devout men and women as patrons of the colony, which was to be consecrated to the Holy Family, and to be called Ville Marie de Montreal. To act as its Governor and as the representative of the Association, a Christian knight and soldier was selected, Paul de Chomedy, Sieur de Maisonneuve.

In the Spring of 1641, Maisonneuve and a small group of strong and courageous men gathered at Rochelle to sail for New France. They were joined by Jeanne Mance, with her maid-servant and the wives of two of the sailors. Miss Mance was then thirty-five years of age. Her father, a merchant of Nogent-le-Roi, had been dead a year, and she was now casting about to see by what means she could put into execution her determination, taken long since, to cross over to New France to engage in the work of a pioneer. She had not heard of the new colony of Montreal, but one of Le Jeune's letters had found its way into her hands, and she, like all devout ladies of France, was fired with ambition to minister in some way to these New World barbarians.

After a tedious voyage across the Atlantic, the new Company arrived at Quebec in August, 1641. The lateness of the season caused them to abandon the hope of reaching Montreal that year, and they were obliged to spend the winter at Quebec. They proved to be both unexpected and unwelcome guests to the Quebec colony.

They were given shelter for the winter by Monsieur Puyseau at Sillery, and we read of Mlle. Mance plodding to the town, five miles away, to visit Mme. de la Peltrie at the Ursuline Convent, which, by this time, was established on its present site.

On the 17th of May, 1642, a pinnace, a flat-bottomed boat, moved by sails, and two row-boats, approached Montreal. All on board raised in unison a hymn of praise. Montmagny, the Governor, was there to deliver the Island, on behalf of the Company of One Hundred Associates, to Maisonneuve, representative of the Association of Montreal. Here, too, were Monsieur Puyseau and Father Vimont, Superior of the Missions; for the Jesuits had been prudently invited to accept the spiritual charge of the young colony. Madame de la Peltrie, who hoped to establish a branch of the Ursulines in Ville Marie, was also a member of the party.

The scene is thus described by Parkman: "Maisonneuve sprang ashore and fell on his knees. His followers imitated his example; and all joined their voices in enthusiastic songs of thanksgiving. Tents, baggage, arms and stores were landed, and an altar raised.

Now all the company gathered before the shrine. They kneeled in reverent silence as the Host was raised aloft, and when the rite was over the priest turned and addressed them. . . . Then they pitched their tents, lighted their bivouac fires, stationed their guards, and lay down to rest. Such was the birthnight of Montreal."

"In the morning they fell to their work, Maisonneuve hewing down the first tree, and laboured with such good will that their tents were soon enclosed with a strong palisade and their altar covered by a provisional chapel, built in the Huron mode, of bark. Soon afterwards their canvas habitations were supplanted by solid structures of wood, and the feeble germ of a future city began to take root." Mme. de la Peltrie, finding no scope for her project, returned to Quebec.

Some time elapsed before the Iroquois discovered Ville Marie, but at length ten fugitive Algonquins, chased by a party of them, made for the friendly settlement as a safe asylum. "From that time forth the colonists had no peace; no more excursions for fishing and hunting, no more strolls in the woods and meadows." The men went armed to their work and returned at the sound of a bell, marching in a compact body prepared for an attack.

In August, 1643, d'Aillebout arrived from France, bringing news of an "unknown benefactress," who had given 42,000 livres for the building of a hospital. This "unknown" later turned out to be Madame Bullion. It was true that a hospital was not needed; no one was sick at Ville Marie, but the colony had been established in order that a hospital might be founded.

The hospital, therefore, was built on the street afterwards called St. Paul Street, surrounded by a palisade, and part of the garrison was detailed to defend it. The building was sixty feet long and twenty-four feet wide, with a kitchen, a chamber for Mlle. Mance, others for the servants, and two large apartments for the patients. It was amply provided with furniture, linen, medicines, and all necessaries, and had also two oxen, three cows, and twenty sheep. A small oratory of stone was built adjoining it. The enclosure was four arpents in extent.

There, on October 8th, 1644, Miss Mance took up her abode and awaited patients. Soon there was no lack of them, for blood and blows and scalps were rife at Montreal. The woods were full of Iroquois, and when not caring for wounded Frenchmen, Miss Mance was kept busy by the wives and children, who went to the hospital for refuge while the men fought the savages.

At Ville Marie it was usually dangerous to pass beyond the ditch of the fort or palisades of the hospital. "Sometimes a solitary warrior would lie concealed for days, without sleep and almost without food, behind a log in the forest or in a dense thicket, watching like a lynx for some rash straggler. Sometimes parties of a hundred or more made ambuscades nearby and sent a few of their number to lure out the soldiers by a petty attack and a flight. The danger was diminished when the colonists received from France a number of dogs, which were trained to recognize the Iroquois and give the alarm. Then the nuns rang the belfry to call the inhabitants together.

The little colony of Ville Marie was not very prosperous at first. By 1648 there were forty houses and two hundred and fifty persons. Maisonneuve and Mlle. Mance constituted its sole vitality. When funds and interest flagged, it was Mlle. Mance who went to France to stir up the zeal of the Company. There, in 1647, we shall leave her for the present.

By 1648 the Jesuits had pushed their way as far as Sault Ste. Marie, and established a Mission for the Hurons. There they built a hospital, to which Indian women, as well as men, were admitted. We find no mention of nuns as nurses. The hospital was destroyed, within the year, by the Iroquois, who burnt the mission station.

During this time several of the Quebec nuns had died, and others from France had augmented their numbers. After five years at Sillery, the constant Indian attacks forced them to abandon that site and take shelter within the city while they put up a building on their own land. Workmen were scarce, and then, as now, not too expeditious. So the nuns themselves, aided by two lay brothers, dug the foundations and carried water to mix clay. Help, in the shape of workmen, finally came from France.

By 1646 both monastery and chapel were built. The nuns were at last under their own roof on the site they have occupied ever since, and they then resumed their white habit—never to give it up again.

In this year the Hotel Dieu gave relief to forty-six French and one hundred and twenty Indians.

Soon this building was too small. In 1658 a larger one was opened, and the following year the Hospitalières extended hospitality, on his arrival from France, to Monseigneur de Laval, who, in 1674, became the first Bishop of Quebec.

Throughout 1660 Quebec was besieged by the Iroquois. Both Hospitalières and Ursulines were obliged to shelter at night in the College of the Jesuits.

The year 1665 saw the arrival of the first regular troops in Canada—the Carignan Regiment. With them came ship fever. The Hotel Dieu received over one hundred sick soldiers in one day. Huguenots were numerous among these troops, and to see them die without professing the true faith was one of the greatest trials of the Sisters.

By 1690 the population of Quebec numbered 1,400 persons, and "there was a sufficiency of doctors, notaries, and architects."

On October 10th, in this year, the community was rudely disturbed. A fleet under Phipps was anchored in the harbor. Frontenac was recalled from Montreal. His presence quieted the panic, but the bombs of the invaders rattled in the city. Twenty-six shells were picked up in the hospital courtyard in one day. Soldiers came from all over the colony. They took up the floors of the hospital to build city fortifications. The well-known response of Frontenac to Phipps' messenger finally saved the situation:—"Go, tell your master I will answer him from the mouth of my cannon!" The execution of this threat saved the day. The fleet sailed away on October 21st.

We left Mlle. Mance, in 1647, in France. She visited Dauversière at La Flèche, where he had inaugurated the Sisterhood of St. Joseph, and where the first nuns had, in 1644, taken their vows. She saw also the

"unknown benefactress," and obtained from her financial aid. Then she returned to cheer the sinking hearts of the colony.

Maisonneuve, in 1654, went to France and returned with increased funds and one hundred workmen. This year the Hotel Dieu was rebuilt.

In 1657 Mlle. Mance fell on the ice and broke her arm, which was set by the Surgeon Bouchard, with such poor result that it remained useless until the following year, when she again went to France and was miraculously healed by touching the casket containing the heart of Monsieur Olier.

The return voyage was made on the St. André, which had served two years as a hospital ship. With Mlle. Mance were three priests (Sulpiciens), and six nuns of the Order of St. Joseph from La Flèche, a result of the scheme devised fifteen years before by Olier and Dauversière during their walk in the woods of Meudon. Three of the nuns were to start a school and three were hospital nuns, one of whom was skilled in pharmacy.

The St. André was infected with ship fever. Many of the Company died on the voyage, and were buried at sea; nearly all fell ill. When the vessel reached the port of Quebec, Laval saw no necessity for a new order of nuns in Canada, and detained them. After much bickering, they received permission to proceed to Montreal, the journey occupying fifteen days. In the meantime they had infected Quebec with typhus.

At Montreal the nuns were received in a room aver the hospital, twenty-five feet square, containing a closet for stores and clothing. The room was made of planks; after a storm the snow was removed with shovels, and their coarse brown bread froze on the table before them.

Up to the time of the arrival of these Sisters, Mlle. Mance, with three servants, had taken entire charge of the hospital. She now gave over the care of the sick to the Sisters, remaining herself Directress of the Institution.

For years they suffered greatly from poverty and hardships. The money given by Mme. Bullion had been entrusted to de la Dauversière for investment. He proved unfaithful to the trust, and so the community was reduced to extreme want. Poverty and sickness were not the only trials of this heroic Sisterhood. In 1661 the Iroquois became so troublesome at Montreal that the inmates of the Hotel Dieu had to take shelter in the fort.

Approaching the shore, where the City of Montreal now stands, one would have seen, about 1670, a row of small compact dwellings, extending along a narrow street, called St. Paul Street, parallel to the river. On a hill at the right stood the windmill of the Seignior, built of stone

and pierced with loop-holes to serve in time of need as a place of defence. On the left, in an angle formed by the junction of a rivulet with the St. Lawrence, was a square bastioned fort of stone. Here lived the Military Governor appointed by the Seminary and commanding a few soldiers of the Regiment of Carignan. In front, on the line of the street, were the enclosure and buildings of the Seminary, and, nearly adjoining them, those of the Hotel Dieu or hospital, both provided for defence in case of an Indian attack. In the hospital enclosure was a small church opening on the street. In the absence of any other it served the whole settlement.

And so the Hotel Dieu played its part in the development of the colony. Jeanne Mance died in 1673, having bequeathed her heart to the chapel. She is described as a "woman of sound sense, excellent judgment and wise sympathy." Her name is revered to-day in the house she founded, and her good deeds are recorded in the history of New France.

In Montreal another institution was established in the year 1688 by the Superior of the Sulpiciens. It was called the General Hospital, and was built on St. Normand Street, where is now the Customs House. It was in charge of an Order of lay brothers. For a time prosperity reigned, but fifty years after its foundation it was in a state of ruin.

In 1701 was born a young Canadian woman, afterwards known as Mme. d'Youville, who was destined to repair the fortunes of this fallen house. She began her life's mission when a young woman by mending clothes and visiting the poor in the General Hospital. In 1747, with three other ladies as helpers, she undertook the charge of the hospital.

Madame d'Youville at first met with great opposition, but overcame all obstacles, and, in 1745, receiving Episcopal sanction and rule, established a new order of nuns, who adopted a grey and black habit.

After this we find the General Hospital spoken of as the Hospital of the Gray Nuns.

Mme. d'Youville died at the age of seventy-one. The Order of Nuns founded by her has spread throughout America. They are usually called Sisters of Charity or Grey Nuns.

It was stated previously that the Recollets in Quebec, in 1621, had built their convent on the banks of the St. Charles. This property was purchased in 1692 by Monseigneur St. Valier (who, in 1688, had become the second Bishop of Quebec), and was given by him to some nuns from the Quebec Hotel Dieu to found what was called the General Hospital of Quebec. It was described as the finest building in all Canada. Here, in 1713, St. Valier took up his abode, and here he died some years later.

In 1717 a separate building was erected for the insane in connection with the Quebec General Hospital. This is the first reference to any special care for the insane in Canada. In 1743 a new and larger hospital building was erected, and throughout the dangers and epidemics of the country the doors of the General Hospital were ever open.

In the years 1776 and 1777, nine hundred died in this hospital of ship fever.

At Three Rivers, in 1697, Monseigneur St. Valier, out of his own personal property, founded, "in perpetuity," another Hotel Dieu, with six beds, for indigent poor, and gave it into the care of the Ursulines. This hospital also shared in the epidemics and misfortunes of the country.

Port Royal (now Annapolis) was founded by Champlain in 1604, and in 1629 became the earliest garrison in Acadia. From the earliest days of its settlement there was a hospital outside the fort, called St. Jean de Dieu. Haliburton states that in 1744 it was the most imposing building in Annapolis. It has long since disappeared.

Originally the territory known as Canada consisted of the Provinces now called Quebec and Ontario. Acadia consisted of Nova Scotia and New Brunswick, with some adjacent land, and the rest of the country was known as the North West. Some fifty years before Canada was finally ceded to the British, Acadia had been conquered by Nicholson (1710), and formally transferred to the British Crown in 1713 by the Treaty of Utrecht, when Cape Breton was returned to the French. Subsequent to Utrecht the French built a fort at Louisburg, Cape Breton.

The original plan of the fort included a hospital, to be attended by nuns like the hospitals at Quebec and Montreal, but in 1716 five Brothers of Charity of St. Jean de Dieu, came out from France and endeavoured to establish a hospital at Dauphin (now St. Anne's), but soon removed to Louisbourg. The Brothers filled the offices of superior, surgeon, dispenser, nurse, and chaplain, respectively.

After the final occupation of the British the old hospital continued for a while, but the oldest inhabitant to-day in Cape Breton remembers it only by name.

These several institutions constituted the hospital world of Canada during the French régime. The annals of all of them are replete with accounts of conflagrations, epidemics, and sieges. The Hotel Dieu at Quebec was twice burned, the last time in 1755, when nearly all the original documents were destroyed. The Montreal Hotel Dieu was destroyed by fire in 1695, 1721, and in 1734. The General Hospital of

the Grey Nuns in Montreal was burned in 1745 and 1765, and the Hotel Dieu at Three Rivers in 1806.

Scurvy and smallpox were prevalent in the early days of the colony. There seem to have been distinct exacerbations of the smallpox in 1703, 1732, 1733, and 1755. Typhus came with almost every ship. Specially violent outbreaks took place in 1658, 1665, 1685, 1756, and 1758.

A plague, called the "Disease of Siam," made its appearance in 1711, 1718, and 1740. It is supposed by some to have been bubonic plague, others believe it to have been an infectious form of meningitis. The deaths from this cause were many. In short, every condition caused by filth, poverty, and hardship was with them in those early days, and many times the young colony was nearly wiped out.

During the first fifty years there seems to have been a scarcity of doctors, particularly at Montreal, though in Quebec, from the very beginning, the colony was never without medical men. Two among the many are particularly worthy of mention—Dr. Gaulthier, who discovered the merits of the winter-green plant, which bears his name, "Gaultheria Procumbens," and Michel Sarrazin, who was noted as a surgeon and whose special study of animals and plants is even to-day regarded as authoritative.

On the 30th of July, 1759, at Quebec, the entire community of the Hotel Dieu and Ursuline Convents, with the exception of seven nuns, were installed, with beds and provisions, inside the walls of the General Hospital. The British, under Wolfe, were besieging the city. For two months, until the siege was raised, this institution sheltered over eight hundred persons.

An interesting story is told in this connection:—"One of Wolfe's officers was wounded in a skirmish preliminary to the Battle of the Plains. He was picked up by a French soldier and taken to the General Hospital. Two days later, the French sent an officer with a flag of truce to the British lines, requesting that the effects of the British officer be sent to him at the hospital. At the same time Indians gave an account of his rescue and condition. Wolfe was much moved, and sent £20 to the French soldier by whose kindness his captain had been saved. Two days later, another flag of truce came from the town, the bearer of which returned the money to Wolfe, as the Marquis de Vaudreuil declined to accept money on behalf of his soldiers who simply carried out the order given to them. Wolfe took advantage of the opportunity to address a letter to Mme. de Ramesay, Directress of the General Hospital, thanking her for the attention paid to the wounded officer, and assuring her that if fortune favoured his arms he would extend his protection to her and

to the community. This promise was faithfully carried out, when, three weeks later, the British entered Quebec." (Dr. Doughty in "The Cradle of New France.")

In the Battle of the Plains, on the 13th of September, 1759, Wolfe died victorious, and Montcalm received a mortal wound. Shortly before his death, Montcalm penned a letter to Townshend, surrendering Quebec, and asking shelter for his sick and wounded.

General Murray was in charge within the walls, and he extended to the Hospitalières the courtesy promised by Wolfe, as well as rations and other necessaries.

After the capitulation was signed, a procession of black-robed nuns, slowly and with bowed heads, wended their way from the General Hospital, through St. Roch's and up Palace Hill.

The city was barely recognizable, everywhere cannon ball and fire had left their traces. Dwellings were unroofed, walls felled, roads obstructed by fallen masonry, and pavements covered with broken glass, which cracked under their feet and reflected the glowing sun.

British soldiers guarded the gates of the city, the ramparts, and public places.

The inhabitants, an unhappy throng, sad and silent, with dishevelled clothing, wandered among the burnt and plundered houses. Through this the Sisters passed to find their convents destitute, plundered—used as garrisons by the British. Their farms also were laid waste and their cattle gone.

The wounded were received in the hospitals and convents, the churches were full. Temporary buildings were erected on the Island of Orleans. For a whole year the Ursulines kept sick soldiers inside their convent walls and cared for them. Scurvy broke out, and the Hospitalières at the Hotel Dieu nursed the sick and wounded, patched their own torn bedding, made clothes for the soldiers, knit stockings for the Highlanders and converted the dying, all at the same time.

From Three Rivers Sisters came to help in Quebec. At Montreal they were busy caring for the wounded and for those who had scurvy.

Soon after the conquest, the Americans, unable to involve Canada in insurrection, resolved to conquer her. Two armies were directed, one upon Montreal, via Lake Champlain, the other upon Quebec. This, the fifth siege of Quebec, began early in December, 1775. Lord Dorchester was then Governor.

To add to the distress of the people, smallpox broke out amongst the inhabitants as well as the soldiers, and again the services of the nuns

were taxed to the utmost. During the bombarding the nuns took refuge from the shells in a vault of their monastery. In spite of the death of Montgomery the siege continued until spring, when the Americans retired before the superior forces of the British.

For a period of twenty-five years the British troops were garrisoned within the walls of the Hotel Dieu. It was not till 1784, when the British fortifications and barracks were in readiness for the military, that the much-tried nuns were left in possession of their own monastery.

Three Rivers also played an important rôle in 1775. American soldiers, afflicted with scurvy, were received into the Hotel Dieu—so many that they filled the chapel. To this day may be seen in the convent American bills issued to the nuns, which, after the war, were not redeemed by the United States. The history of the Hotel Dieu of Three Rivers proudly states that, during this episode, a Company of Irish soldiers lined up before the convent and cheered the Ursulines.

In 1776 the Americans, under Wooster, had possession of Montreal and were marching to Three Rivers. Hearing that the English were in possession at Three Rivers, Wooster fled to Sorel, leaving four officers at the Hotel Dieu.

On the 8th of June, one and a half miles from town, a battle between seven thousand English and two thousand Americans was fought, which lasted two hours. The wounded of both armies were brought into the Hotel Dieu. England had enlisted the services of a Brunswick regiment. Their commander, Riedesel, passed the winter of 1776 in Three Rivers, and the Hotel Dieu was used as a military hospital.

During the war of 1812, this hospital again figures in receiving the wounded and sick.

Of these pioneer hospitals, the two in Quebec remain to this day on their original site. The archives of the Hotel Dieu are among the most valuable records of the country, and the chapel contains some rare masterpieces and relics. At Three Rivers the Sisters of Providence opened a new hospital in 1864, and, as it was found best to have only one in the city, the historic Hotel Dieu of the Ursulines was closed. In Montreal the neighbourhood of the Hotel Dieu became so thickly built that it was necessary to remove to a new locality. In 1859 the present extensive premises on Pine Avenue were erected. In 1861 the remains of the deceased Sisters were removed from the old chapel to the present site. The Grey Nuns, in 1871, removed their convent from St. Normand Street to Guy Street.

With the 18th century passed the heroic age of the Canadian Nursing

Orders. The era of peace and civilization, if less romantic and picturesque, has brought for them at least less perilous times.

II. British Régime.

The earliest hospital established under British rule was at Halifax.

The fort of Louisburg was taken by Pepperell in 1745, and returned by the Treaty of Aix-la-Chapelle three years later; it was then reinforced. Gy this time the British settlements in Acadia consisted only of a small garrison at Annapolis and a feebler one at Canseau. To offset Louisbourg, the British, in 1749, established a military station at Chebucto. To this post from Great Britain were sent out soldiers, sailors, mechanics, tradesmen, farmers, labourers, women and children—in all, 2500 persons, this founding Halifax.

The following year, 1750, the first public hospital was established there on the 19th of March. It stood north of the present site of Government House.

In 1765 were two hospitals in Halifax called the Red and the Green. Both were situated at the water's edge. In 1766 the Red Hospital was granted to the city as an almshouse and was used as such until 1800, when it was torn down to permit of the building of Government House.

In 1834, during the cholera outbreak, Dalhousie College was used as a pest-house. It was afterwards burned and a new College building erected.

Military Hospitals:—Information regarding military hospitals is vague and fragmentary at the present time. There are documents extant, however, relative to such an institution at Kingston prior to 1790.

The earliest hospitals for soldiers were of course the established institutions at the various towns and posts. At Annapolis and Louisbourg there were hospitals established shortly after the garrisons, and they served not only the garrisons but any sick in those places.

Between the years 1759-1814 temporary field shelter must have been erected wherever the wounded were not near enough to the established hospitals to be taken to them. At Quebec, in 1759, the British took possession of the city hospitals and convents and erected field shelter outside the city as well as on the Island of Orleans. Shortly after the occupation of the British, garrisons were established throughout the country and by 1793 military hospitals existed in Sorel, Montreal, Kingston, York, Fort George at Fort Niagara, Amherstburg and probably elsewhere.

In 1826, a fine military hospital was built in Quebec. For some years past it has not been used, but it has recently been opened up again. In

1826 also, Colonel By erected a military hospital in Ottawa; it contained twenty beds and stood where the western block of the Parliament buildings now is.

Toronto originally had one at the corner of Yonge and Front Sts. which disappeared. A new one exists in Stanley Barracks.

Halifax has a well-equipped hospital with one hundred beds, built during the Crimea, (about 1854).

Kingston, Fredericton, St. Johns, P.Q., all have military hospitals more or less old.

Malbaie Disease:—In 1773 the attention of the Government was called to a horrible scourge which ravaged the country. It was called Malbaie Disease, and was said to have been brought to Baie St. Paul by a detachment of Scottish troops. Owing to the habits of the "habitants" it spread until the whole province was affected by it.

In 1786 Lord Dorchester, then Governor General, took steps to distribute remedies throughout the country by the medium of the "Curés" and "Seigneurs." The scourge was finally stamped out. The exact nature of this disease was the subject of much correspondence between the Government and medical men among whom difference of opinion existed as to diagnosis.

Montreal General Hospital:—After the war in Canada of 1812-1814 with the States, after disbandment of the armies in 1815, when Waterloo broke the power of Napoleon and settled the peace of Europe, there was a great influx of emigrants into Canada from Great Britain and Ireland. The winter closing of the great water-ways prevented new arrivals from going far West. Quebec, Montreal and Kingston were crowded with emigrants, starving, sick and with no means of support.

The Montreal Female Benevolent Society was founded in 1816. Through its efforts in this year, a four room house was taken on Chaboillez Square and was called "The House of Recovery." The first doctor in charge was Dr. T. P. Blackwood, a retired army surgeon. In 1812 a large house, capable of accommodating twenty-four patients was hired on the north side of Craig St. near Bleury; this was called Montreal General Hospital.

In 1820 the land on which the front of the present hospital stands was bought. (It was then called Marshall's Nursery.) The corner stone was laid June 6th, 1812, with Masonic honours and the following day the hospital was ready for use with accommodation for seventy patients. The buildings cost $24,000. In January, 1823, His Majesty George IV. granted a Royal Charter.

In 1866 the land opposite the hospital was bought, and the old build-

ings on it removed; it has been kept as one of the "lungs" of the hospital ever since.

In 1822 a School of Medicine was organized in connexion with Montreal General Hospital, called Montreal Medical Institution. In 1828 this became the Faculty of Medicine of McGill University.

In 1832 cases of cholera were received in the hospital. In three months three thousand died of it, or one-tenth of the entire population of the city.

In 1869 one hundred and fifty cases of smallpox were treated in the Montreal General Hospital. At this time the hospital consisted of the present building on Dorchester Street, the Reid and Richardson wings, and the fever hospital. There were two house surgeons, a matron and nurses of sorts. The garret was occupied by employees and nurses. The wards were small, holding less than twelve beds. The Training School was started in 1875. (*The Canadian Nurse*, March, 1906.)

Toronto General Hospital:—In 1819 certain lands in York, (which town in 1834 became Toronto) were granted by the Crown, in trust to four persons, for hospital and park purposes.

In that year appeared in the Upper Canada Gazette the following notice:—"Proposals for building by contract a Brick Hospital in the town of York will be received at the Post Office, by William Allan, Esq., where a Plan, Elevation and particular description of the intended Building may be seen and any information respecting it obtained. Proposals to be given in within one month from this date. York, 24th November, 1819."

This original York hospital was built on King Street, near John Street. In 1832 it was described as "in successful operation and affording to the students daily opportunities of observing diseases and their treatment."

Later that portion of the original grant intended for the support of a hospital, was vested in three gentlemen, who were known as the Trustees of the Hospital Endowment. They were not incorporated.

In 1847 an act was passed incorporating the Trustees of the Toronto General Hospital. This act was modified in 1876 and again in 1906.

Shortly after 1847 the present main building on Gerrard Street was erected. To it have subsequently been added several additions.

Kingston General Hospital:—At Kingston, in 1812, a few citizens banded themselves together under the name of the Kingston Compassionate Society with the object of relieving the distress and suffering of emigrants. The Society's work increased and in 1821 was taken over by the Female Benevolent Association which, in 1833, appealed to

the Legislature of Upper Canada and obtained a grant of £3,000 towards the erection of a hospital. The contracts for the work were let in 1833, and the building was completed in 1834, but owing to lack of means the interior was unfinished until 1837 when a further grant of £500 was received from the Government.

During the rebellion of 1837-8, Colonel Bonnycastle was instructed to procure a suitable building for a military hospital, and on his advice the building recently completed for a General Hospital was used for a Military Hospital from May, 1838, to June, 1839.

In 1841, at the request of Lord Sydenham, the building was changed to some extent and the United Legislature of Canada met there until 1844. In this year the Female Benevolent Association received permission to send their sick poor to the hospital, and a small grant was made by the Legislature for maintenance.

Up to the year 1856 the building was under the control of a Board of Trustees consisting of the Mayor of the City of Kingston, Judge of the District Court, Warden of the Midland District, Sheriff of the Midland District, and three Aldermen. The first meeting of the Board of Governors under the new charter was held November 5th, 1856.

Marine Hospitals:—At Quebec in 1831 the Marine and Emigrant Hospital was erected at a cost of £23,000. It was intended for the reception of mariners and persons coming by sea who might be afflicted by disease. It occupied a site opposite where Cartier landed three hundred years before. It accommodated 362 patients. The corner stone was laid by Lord Aylmer, then Governor-General. Among those actively interested in the institution are found the names of Hammond Gowan, Esq., Dr. Morrin and Dr. Hall, an eminent surgeon. After the death of Dr. Hall the hospital became demoralized and its supervision was undertaken by Dr. James Douglas, a gentleman of the "old school" who had come to Quebec in 1826 after a varied medical experience in Edinburgh, London, India, the United States and elsewhere, and whose name is associated in Quebec with many medical reforms.

Dr. Douglas in his "Journal" describes the institution as follows:—"The Marine and Emigrant Hospital, as a school of practical surgery, was second to none on this continent. Several circumstances tended to make it so. There was a large fleet engaged in the timber trade, the ships were comparatively small, seldom exceeding 500 tons; they were loaded by the seamen, and by the hired emigrants directed by and superintended by a stevedore. There was no steam, and none of the modern appliances for hoisting in and stowing away the heavy timber, which was about the only cargo then shipped. The consequences were,

that great numbers of fractures were admitted to the Hospital, as well as many which had occurred in the crowded emigrant ships during the spring passage out."

The first medical lectures ever given in Quebec were at the Marine and Emigrant Hospital, beginning on the first of May, 1837, '38, '39. They were given by Dr. Douglas and Dr. Painchaud. Following the typhus epidemic of 1847-48, conditions at the hospital again became unsatisfactory and Dr. Douglas soon afterwards retired from active practice.

As the shipping industry passed from Quebec to other ports the hospital gradually fell into disuse. It was closed about 1878. The Canadian Government subsequently instituted a system of Marine Hospitals which includes all sea-ports.

Quarantine:—From 1800 to 1832 various epidemics affected localities, but none during that time seem to have invaded the whole country.

Early in the nineteenth century cholera had originated in the East; by 1832 it had reached London. With every vessel the pestilence was expected in Canada. The Government took the precaution of opening a quarantine station at Grosse Isle, thirty miles below the port of Quebec. Temporary buildings were erected. The station was under military control with military medical officers, two companies of regulars to do police and orderly work and artillery with three mounted cannon to prevent ships from passing.

On the 8th of June the cholera reached Grosse Isle. It went by leaps and bounds throughout Canada. Within three months 4,000 persons died in Quebec alone. Since then there have been four outbreaks in Quebec Province, (1834, 1849, 1852, and 1854.)

At Grosse Isle, as matters passed from Imperial to Colonial Government, military medical officers and men were replaced by civilians. The station came under the control of the Federal Government. Stations were also opened in 1832 at Halifax and St. John, N.B. Later on quarantine stations were opened at Victoria, B. C., Chatham, N. B., Sydney and Louisbourg, C. B., Charlottetown, P. E. I., and Vancouver, B. C.

Leprosy:—Two Norwegian sailors from a barque called the "Florida" landed in 1815 at Caraquette, Gloucester County, N. B. Later, two women living at Tracadie and Neguaak espectively, who had washed their linen, became lepers. The disease became endemic among the French settlements on the River Miramichi and the shores of the Baie des Chaleurs and in parts of Cape Breton.

In 1844 a hospital was built for these lepers on Sheldrake Island,

near the mouth of the Miramichi River In 1849 the institution was transferred to Tracadie, N.B., and in 1868 placed in charge of the Hospitalières of St. Joseph, from Montreal. The Lazaretto was at first Provincial but at Confederation became the property of the Federal Government.

The Grey Nuns, in 1840 established a hospital called the Hotel Dieu at St. Hyacinthe, P.Q., which has since attained to large dimensions. This same Order were the pioneers in hospital work in the North West. On April 25th, 1844, three Grey Nuns left Montreal in canoes for the far off Red River Settlement. They reached St. Boniface, opposite Winnipeg, on June 21st. There they immediately took charge of the sick and established the first hospital in the North West.

In 1845 the Hotel Dieu at Kingston was founded by the Religious Hospitalières of St. Joseph from the Hotel Dieu of Montreal.

The same year the General Hospital at Ottawa had its beginnings in a frame building on the North side of St. Patrick Street near Sussex Street. It was established by the Grey Nuns from Montreal.

Ship Fever:—The horrors of 1847, caused by the failure of the potato crop, frightful famine and the ensuing typhus which made Ireland desolate, can never be forgotten. Hundreds of thousands fled for refuge to America, many died on shipboard while others landed on the shores of Canada only to succumb to the pestilence. Thousands died at Grosse Isle, at Quebec and at every port along the water ways. The hospitals were overfilled and temporary sheds were erected to shelter the victims. In Quebec a private hospital was opened by Drs. Douglas and Racey who anticipated the outbreak. It was on the Beauport beach and accommodated masters of vessels and cabin passengers who objected to going into crowded public hospitals.

During the outbreak this place became over crowded and consequently the "dwelling house and premises of the old breweries" at Beauport were leased. 165 cases of typhus were cared for in these buildings. Only four died. The fee charged was $4.00 per diem.

On June 17th, at Point St. Charles hundreds were dying unaided. Three sheds 200 feet long and 50 feet wide were built. The Grey Nuns went to aid the sufferers. In th open space between the sheds lay the inanimate forms of men, women and children. More arrived day by day. Death was there in its most appaling form. On June 24th, two young nuns were stricken with ship-fever, more followed hourly until thirty lay at the point of death. Seven died. Overcome with fatigue those remaining were obliged to withdraw. Then the Sisters of St. Joseph from the Hotel Dieu took their place. In September the Grey Nuns resumed their

heroic task at the sheds and continued their charitable labours not only during 1847-48 but also later when the cholera in 1849 replaced the typhus.

At this time the only route for the transportation of emigrants to the Canadian West was by Ottawa through the Rideau Canal which had been opened in 1832. Over three thousand emigrants reached Bytown. With them the typhus.

The first patients were taken to the Grey Nuns' Hospital. Later the Government built sheds for their reception. The nuns continued to care for the fever striken. The rate at this time paid by the Government was 12s. 6d. a week per head. (Canadian Monarchist, May 30th, 1856.)

Before the erection of the special sheds, any improvised shelter had been utilized, such as sheds, tents, or upturned boats. Three hundred died in Bytown.

The County of Carleton General Protestant Hospital was the outcome of the fever epidemic. Many desired a hospital under the control of the public, to be supported by a public subscription.

This resulted in the formation of a Board whose efforts were rewarded in 1850 by the erection of the stone building on the lot at the North West corner of Rideau and Wurtemberg Streets. The Board was incorporated in 1851. In 1854 Bytown became Ottawa. The original building, until 1875, served as the General Hospital, it was then used as a Contagious Diseases Hospital until 1903, when the city opened a new Isolation Hospital. In 1907 the old building was torn down.

Other important Canadian hospitals founded previous to 1875 were:—The General Hospital, Hamilton, 1850; General and Marine Hospital, St. Catharines, 1865; Jeffrey Hale Hospital, Quebec, 1865; General Hospital, Winnipeg, 1871; Victoria Hospital, London, 1872.

Hospitals for the Insane:—Little is known of the condition of the insane during the French régime, and for seventy-five years after the establishment of British rule they were cared for in almshouses and gaols.

The city of St. John, N.B., in 1835 converted a building erected as a cholera hospital into an asylum. Later, in 1848, the present St. John Asylum was opened. Next came Toronto in 1841. The old York gaol, then, recently abandoned, was fitted up and served until 1850, when the patients were transferred to the present Toronto Asylum, which for twenty-two years was the field of labour of Dr. Joseph Workman, to whom is due much of the best in the Canadian system of caring for the insane.

In Quebec, in 1845, Dr. Douglas leased the estate at Beauport consisting of the old Seignioral Manor house built by Robert Giffard in 1634, on which estate there were large commodious stables and outhouses.

These were rapidly transformed into temporary quarters. In 1850 a special building was erected.

For twenty years Dr. Douglas laboured for the amelioration of conditions among the insane. In 1865 the asylum changed management. The Grey Nuns from Montreal, in 1893, took charge of the institution which is now their private property.

In 1847 Prince Edward Island erected an asylum, and in 1852 the Sisters of Providence took up in a small way the work which has since developed at Longue Point, a few miles east of Montreal.

In 1856, in Kingston, the stable of an old mansion was fitted up. In 1862 the present building, called Rockwood, was opened. In 1877 it became a Provincial establishment. In 1858 Nova Scotia began the creation of a system of County asylums.

London Asylum was opened in 1859 in the old military barracks at Fort Malden on Detroit River. In 1870, the present hospital at London being completed, the patients were transferred. In 1871 the first Manitoba asylum was established at Fort Garry in a storehouse of the Hudson Bay Company. It was later transferred to Selkirk. The year 1872 witnessed the birth of the British Columbia institutions in a wooden building on the Songhees Indian Reserve, outside Victoria. Later, in 1878, a new asylum was erected on the mainland near New Westminster.

The history of many new institutions and improvements for the care of the insane, as well as of the expansion and development of the hospital idea throughout this country, subsequent to 1875, does not come within the scope of this paper, and in the already extensive field I have attempted to cover it has been impossible to consider more than the merest outline.

In conclusion, I wish to express my thanks to the many who have assisted me by giving information, otherwise unobtainable, and in particular to Dr. A. G. Doughty, C.M.G., Dominion Archivist, not only for suggestions but for having accorded the privilege of access to the archives.

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REPORT ON CASES OF TYPHOID FEVER TREATED IN THE MONTREAL GENERAL HOSPITAL IN 1909.

BY

A. H. MacCordick, M.D., and R. E. Powell, M.D.

During the year 1909 there were 201 cases of typhoid fever treated in the wards of the Montreal General Hospital.

Considering the general condition of the hospital patients as a whole, the complications and the mortality, the disease seems to have been of a more severe type than that in some of the previous years. It must be remembered, however, that observations on the condition of those in the hospital might tend to exaggerate the apparent severity of the disease taken as a whole throughout the city, as the epidemic being so widespread and the hospital accommodation inadequate, only the more

severe cases were admitted. 144 of these were males and 57 were females. These numbered according to the following ages:—

From	5 - 10	years	22 cases
"	10 - 20	"	40 "
"	20 - 30	"	100 "
"	30 - 40	"	29 "
"	40 - 50	"	7 "
"	50 - 60	"	1 "

The total time spent in the hospital was 1020½ weeks, or an average of 36.4 days for each patient. All of these except ten at some time gave the Widal reaction, it being first found in the following order:

From the	5th	to the	10th	day	25 cases
" "	10th	"	15th	"	123 "
" "	15th	"	20th	"	14 "
" "	20th	"	25th	"	13 "
" "	25th	"	30th	"	7 "
" "	30th	"	40th	"	1 "
" "	40th	"	50th	"	4 "
" "	50th	"	60th	"	2 "
" "	60th	"	70th	"	2 "

2 *There were 65 bile cultures taken in all*:—

26 of these were positive between the 5th and 10th day
8 " " " " 10th " 15th "
3 " " " " 15th " 20th "
3 " " " " 40th " 50th " during relapse.

13 of these were negative between the 5th and 10th day
9 " " " " 10th " 15th "
3 " " " " 15th " 20th "

3. *The Spleen was first palpable* in 90 cases in 5 - 10 days
" " " " 17 " 10 - 15 "
" " " " 13 " 15 - 20 "
" " " " 11 " 20 - 30 "

It was enlarged but not palpable in 35 cases, and was not enlarged in 34 cases. In one case it was enlarged for the second time during relapse.

4. *Rose spots were present in 116 cases.*

They appeared in 68 cases from the 5th - 10th day
" " 33 " " 20th - 15th "
" " 9 " " 15th - 20th "

In 31 cases there were no spots.

In 6 cases the spots reappeared during relapse.

The average white cell count in adults was 5,400; the maximum being

12,500 and the minimum 2,000.

The average count in children below 12 years of age was 14,700.

The average maximum temperature was 104; the highest being 107 2-5, and the lowest in any one case being 101 4-5.

The complications were as follows:—

From the 5th to the 10th day.

1 had pleurisy.
1 had broncho pneumonia.
3 had lobar pneumonia.
1 had retention of urine with no apparent anatomical lesion.
7 had severe abdominal pain.
1 had acute peritonitis and was operated on for suspected perforation.
1 had perforation.
14 had bronchitis.

From the 10th to the 15th day:

3 had epistaxis.
1 had hæmorrhage.
1 had severe urticaria.
1 had acute suppurative otitis media and general septicæmia.
4 had incontinence of urine.
1 had phlebitis with recurring rigors.
1 had rigors and bronchitis.

From the 15th to the 20th day:

4 had hæmorrhage.
1 had retention of urine.
8 had acute suppurative otitis media.
1 had myocarditis with acute dilatation.
4 had lobar pneumonia.
1 had periostitis.
5 had phlebitis.
1 had acute cyst of the broad ligament from which a pure culture of bacillus typhosus was obtained.

From the 20th to the 30th day:

2 had Cheyne-Stokes' respiration.
1 had acute dilatation of the heart.
3 had broncho pneumonia.
2 had perforation.
3 had cutaneous hæmorrhages.
1 had thrombosis of the femoral and iliac arteries with gangrene of both legs.
1 had splenic infarct.
1 had acute appendicitis.

1 had pyelo-nephritis due to b. typhosus.
1 had acute endocarditis.
3 had cholecystitis which subsided.
1 had cholecystitis with seven perforations of the gall bladder.
10 had tympanitis.
4 had phlebitis.
15 had slight nerve deafness.
2 had furnnculosis.
2 had severe diarrhoea.
1 had acute tonsilitis.
1 had acute mania following delirium.
From the 30th to the 40th day:
3 had phlebitis.
1 had ischio-rectal abscess.
2 had furunculosis.
3 had erysipelas, followed in one by streptococcic septicæmia.
1 had osteomyelitis.
2 had pneumonia.
1 had acute mastoiditis.
1 had acute mania (child of 12 years.).
1 had pulmonary infarct.
1 had acute otitis media.
1 had severe acute nephritis.
From the 40th to the 50th day:
1 had meningitis due to b. typhosus.
The urine in 112 cases showed the following:
Spec. Grav. 1008-1020.
Acid
Albumen present in small amount.
Casts present.
In 57 cases the urine was normal.

The Erlich reaction was found only in 31 cases; the average time of its appearance being the 12th day.

Delirium was present in 43 cases. The average time when it appeared being the 16th day.

There were 21 deaths or 10.49 per cent. Of these
1 had Cheyne-Stokes' respiration and marked toxæmia.
6 had pneumonia.
1 had meningitis.
1 had thrombosis of the femoral arteries and gangrene of both legs.
1 had acute suppurative otitis media and general septicæmia.
1 had erysipelas and streptococcus septicæmia.

1 had hæmorrhage and renal abscesses.
6 had perforation.
1 had perforation and hæmorrhage.
2 had toxæmia.

Analysis of Fatal Cases.

Case I.—J.G., age 21, adm. Oct. 5, in the 10th day of his disease, complaining of headache and weakness. He was extremely toxic. The pulse weak and temperature ranging from 103-105. On the 23rd day he had a small intestinal hæmorrhage, followed during the next 2 days by 9 hæmorrages, some of which were profuse, death occurring on the 25th day.

The autopsy revealed:

Extensive ulceration of the lower third of the ileum, some of the ulcers extending through the mucosa, submucosa and muscular coats.

Case II.—G.M., age 25, adm. Oct. 7, on the 9th day of his illness, with headache, abdominal pain, feverishness and weakness. His temperature ranged from 103-106. Respirations 22, pulse 88. His white cell count showed 12,400 leucocytes, and a bile culture gave the b. typhosus. On the 16th day he developed a severe bronchitis. On the 21st day he had two profuse hæmorrhages. The breathing became markedly laboured, and on the 25th day he died.

Autopsy revealed:

Extensive hyperplasia of the Peyer's patches but only a small amount of intestinal ulceration. He had broncho-pneumonia, and the kidneys were riddled with multiple abscesses from which pure culture of the typhoid baccillus was obtained.

Case III.—E. S., age 26, adm. Aug. 26, on the 15th day of the disease. He had severe headache, diarrhoea and abdominal pain. He was very pale and toxic and at times was slightly delirious. The temperature ranged from 104-105. On the 21st day he was suddenly seized with sharp severe pain in the right iliac region, followed in a few minutes by rigidity of the abdominal muscles and tenderness. The pulse ran up to 104 and the temperature dropped to 96 in two hours. He was operated on and a perforation found 35 cm. from the ileo-cæcal valve. He died three days later with general peritonitis and acute nephritis.

Case IV.—G.J.M., age 32, adm. Oct. 4, on the 23rd day of the disease, with dizziness, headache, weakness and diarrhoea. His pulse was very weak and he showed marked degree of toxæmia.

The Widal was positive. White cells 4,000. He had rose spots, and the spleen was palpable. The urine showed albumen and casts, with

a few red blood cells. The Ehrlich reaction was also present. On the 40th day he had small cutaneous hæmorrhages over his body, and had a small hæmorrhage from the intestine. On the 54th day he was noticed to be somewhat restless and irritable, and he died on the 55th day.

Autopsy revealed:

Extensive intestinal ulceration; early broncho-pneumonia, and acute meningitis, a pure culture of bacillus typhosus being obtained from the exudate.

Case V.—J.T., male, age 32. Was adm. Dec. 11, in the 14th day of his disease. He had been in bed for two weeks with sore throat, weakness and feverishness. On his admission his temperature was 104. Pulse 120, and respiration 34. The spleen was palpable, and there were many rose spots. The left lower lobe was consolidated. Two days later the whole left thorax became dull, and he developed a pleuro-pericardial friction on the left side. He died on the 18th day.

At autopsy he was found to have:

Typhoid ulceration of the intestine; left lobar pneumonia with acute pleurisy.

Case VI.—E.L., male, age 22, adm. Dec. 16, in the 16th day of disease, with headache, diarrhœa and wekness. Temperature 105, respirations 30, and pulse 120. He had abdominal pain and distension continuous. Shortly after admission he became delirious and very restless, requiring a watchman. On the 18th day he had a profuse hæmorrhage and lapsed into deep coma. He had given a positive culture on the 16th day, had numerous rose spots, and the spleen was palpable. On the 24th day, shortly before death, he vomited. and the abdomen became more distended, but owing to the coma no tenderness or pain could be made out.

Autopsy revealed:

Extensive typhoid ulceration; general peritonitis; perforation of the ileum 8 cm. from the ileo-caecal valve.

Case VII.—M.M., male, age 30. Was adm. on Dec. 8th, in the 4th day of his illness. He had severe headache, pain in his left side, and was very toxic. On admission a blood culture was positive. He had numerous spots, but the spleen was not enlarged. The temperature was 104. The white cells numbered 11,407, and he had incontinence of urine. He developed consolidation of the left lower lobe, gradually became comatose, and died on the 16th day.

No autopsy was obtained.

Case VIII.—A.O., age 30, male, adm. April 20, in the 14th day of his illness, subsultus, weak pulse and bronchitis, which later develop-

ed into broncho-pneumonia. The spleen was palpable, and he had numerous rose spots. Temperature 106. Pulse 100. Respirations 30. He had an alcoholic history. He gradually sank and the breathing became Cheyne-Stokes in character before death.

Autopsy revealed:

Extensive ulceration of the intestine: broncho-pneumonia and acute pleurisy.

Case IX.—C.S., a Chinaman, aged 26, adm. May 9th, in the 14th day of his disease, with headache and weakness. On the 16th day he became delirious, the neck stiff, and the knee jerks increased. The Widal was positive on admission, and the white cells 7,000. The delirium became more marked, and he died on the 19th day.

Autopsy revealed:

Typhoid ulceration of the intestine and congestion of the lungs.

Case X.—J.C., male, age 25, adm. Sept. 15, on the 5th day of the disease, with rose spots, enlarged spleen, and a marked toxæmia. On the 10th day a positive culture was obtained, and on the following day a positive Widal. Temperature 104; white cells 2,500. On the 25th day he had severe abdominal pain and tenderness in the right iliac region. He was operated on and a perforation found 10 cm. from the ileo-cæcal valve.

The urine showed a fairly large amount of albumen. with granular casts and red blood cells. He gradually sank and died on the 40th day.

Case XI.—W.H., age 28, adm. January 24, 1909. Positive Widal. White count 4,200.

January 26.—Had convulsion, jaundice. Tenderness over gall bladder. Retention of urine. Abdominal distention.

February 4th.—Right basal pneumonia. Acute delirium. Jaundice. Slight hæmorrhage from bowels.

February 9th.—Condition much worse. Right cardiac enlargement. Right lower lobe completely involved. Pulse barely palpable. Patient died in afternoon.

No autopsy.

Case XII.—J.J., age 20, adm. March 16, 1909. Died March 26, 1909. Admitted with typical typhoid. March 21st, developed cough, dyspnœa and evidence of lobar pneumonia at right side, rusty sputum. White count 4,000. Involvement of lung crept up to apex on right, and patient became cyanosed. Dilatation of right heart. Death from cardiac failure.

Autopsy showed right lung pneumonic; healing ulceration of ileum; acute nephritis; myocarditis.

Case XIII.—H.J., age 31, adm. Sept. 12th. Typical typhoid. Ab-

dominal condition good. Four days after admission had sudden sharp abdominal pain. Distension, obliteration, liver dulness. Leucocyte count elevated from 5,060 to 9,000.

Operation on the 21st day—two perforations, one old, walled off against right posterior wall of abdomen—another fresh, both about 8 inches from cæcum. Bowels gangrenous—4″ resected—anastomoses done. Patient left table in fair condition. Died September 21st of general peritonitis—fresh ulceration around last perforation. Anastomoses perfect.

Case XIV.—F.W., adm. 3rd week. Very toxic. Oct. 14, 1909. Three severe hæmorrhages. Very severe pain. Patient pulseless and toxic. Perforation diagnosed. Pneumonia of left base. Same evening patient had well marked sign of peritonitis. Condition would not permit of operation.

Case XV.—M.S., age 50, adm. in 2nd week of typical typhoid. On 22nd day gangrene of right foot began with great pain and tenderness of leg. By October 22 condition had spread to thigh, and right femoral was pluseless. Temperature very intermittent. Maximum 104. No rigours.

Attempt to remove thrombus from femoral unsuccessful on October 22nd.

November 5th.—Right leg amputated. November 7th—Septicæmia. Temperature 103. Pulse 136.

November 8th.—Gangrene of left foot. Died November 10th with gangrene of left foot and leg. Post-mortem showed thrombosis of the femoral and external iliar arteries.

Case XVI.—A. P., age 27, adm. 21st day of disease. Ran very severe course. Hæmorrhages very severe 3rd week. Congestion of both lungs. Acute delirium and death from toxæmia.

No post mortem obtained.

Case XVII.—A.D., age 17. Ill for 11 days. Delirious. High temperature. Typical typhoid. On admission very delirious. Died of severe toxæmia. No complications.

Autopsy showed: ulceration of ileum and cæcum; infarction of spleen; necrotic mesenteric lymph nodes.

Case XVIII.—W.L., age 9. Ill for 11 days. Marked delirium on admission, with white count 10,000. Had several severe rigours. Acute suppurative otitis media.

Patient became weak—comatose. Died 15th day of disease.

Autopsy showed: double suppurative otitis media. Brain and membranes normal. Cloudy swelling of all organs.

Death due to severe toxæmia.

Case XIX.—H.E., age, 32. Ran very mild course. Small hæmorrhages on 25th day followed in 6 hours by signs of perforation.

Operation revealed perforation 12 inches from cæcum. Pelvic peritonitis. Patient died in 24 hours.

Autopsy showed : sutured wound of bowel well closed; no leakage; general peritonitis.

Case XX.—G.A., age 24, adm. Nov. 15th. Mild typhoid. Had a relapse on 32nd day. Severe hæmorrhage from bowels 38th day.

Developed erysipelas of face and streptococcic septicæmia shown by blood culture.

Patient died after severe collapse on December 13th.

Case XXI.—D.C., age 24, male, adm. Jan. 11, 1909. Typical typhoid—7th day of disease, temperature maximum 102½. Had acute abdominal pain on the morning of January 13th, 1909,—9th day of disease. Developed rigidity of lower right abodmen and great tenderness. Operated on within 24 hours. Progress good for ten days, abdomen soft, no complaints. Temperature remittent, 99°-102°.

Developed acute suppurative parotitis on January 26th (22nd day), and abdomen showed signs of abscess formation with free drainage through site of operation wound.

On January 28th, incision was made in right parotid and a great deal of pus and blood escaped; culture. Condition rapidly became worse and patient died on February 1st (24th day).

Autopsy showed: typhoid; acute suppurative parotitis; general peritonitis.

On considering these figures, we find the majority of those afflicted were young adults at the most important time, at least for themselves, of their lives, and at the time when many left wives and families without support, often having had to give up situations.

On multiplying the total number of days in the hospital, 7,143, by $1.75, the amount it costs to keep a patient in the ward for one day, we find a total sum of $12,500.00 expended.

We see, that in 26 cases we obtained the typhoid bacillus by the bile culture between the 5th and 10th days, and in 8 cases between the 10th and 15th days, making a total of 31 positive cultures before the 15th day or before the Widal usually appears.

The bile medium is made by using 2-3 ox bile and 1-3 bullion with 1 per cent. glucose.

Our method has been to insert the needle of a small glass syringe into the median basilic or cephalic veins, draw off about 1 cc. of blood, expel all but a few drops into a bile tube, and with the remaining

drops (which are an accurate sample of the patient's blood) we did a white cell count and filled a Widal tube.

After 6 to 10 hours incubation of the bile tube, transplants are made on agar slants and the resulting growth, if any, is examined for typhoid. The length of time taken for a definite report being 24 to 36 hours.

The culture is also of extreme value to distinguish a relapse in the disease from other complications which may arise. When we see the death rate to be 10.49 per cent., and when we consider the list of complications, the permantnt disabilites which must necessarily follow, and the enormous cost in time and financially, surely our epilogue must be that there is an evil at work in our city against which the most drastic measures should be taken.

A CASE OF EUROPEAN HOOK-WORM DISEASE—"ANKYLOSTOMA DUODENALE."

BY

RALPH E. POWELL, M.D.

S. F., male, aged 29, admitted to the Montreal General Hospital December 18th, 1909.

Complaints.—"Sick in stomach and chest."

Personal History.—Born in Italy where he has lived as a farmer, working with bare feet, until four years ago. Came to Canada in 1905, and has been here ever since. No previous illness. Works as a labourer.

Family History.—Negative.

Present Illness.—Began in February, 1909, with blood streaked expectoration, no cough. Had severe pain across epigastrium and over right costal border. Severe night sweats. Bowels were very constipated. This condition kept up until October, 1909, when he became so weak that he stopped work. He attended the outdoor department on one occasion in October and was then lost track of; no diagnosis was made at that time. Symptoms remained constant. Patient had lost 20 pounds from February until December. Pain persisted. Weakness and loss of energy became exaggerated and patient was admitted on December 18th.

Condition on Admission.—T. 98°, P. 64, R. 20. Small, well developed Italian. Intelligence very low. Evident loss of weight, though patient is still well nourished, weighs 125 lbs. Mucous membrane pale.

Respiratory System.—Bloody muco-purulent expectoration—no cough. upper respiratory passages are clear. Thorax is symmetrical in outline. Expansion poor, 2 cm. Left lung is normal. Right lung shows normal fremitus. Resonance is impaired below level of 9th spine behind.

Breathing is vesicular but accompanied at extreme apex and base by numerous crepitant rales.

Circulatory System.—Is normal except for moderate anæmia. Red cells 4,300,000. White cells 14,200. Hæmoglobin 70 per cent.

Digestive System.—Is negative except for severe abdominal tenderness over upper region and accentuated over region of pylorus. (No occult blood in stools).

Genito-Urinary System.—Is normal.

Patient ran a slight febrile course for one month, max. 99½°, when temperature became normal. Von Pirquet cutaneous tuberculine test negative. Subcutaneous test up to 4 mgm. was negative. Sputum did not contain tubercle bacilli. Physical signs of chest became normal.

February 9th.—Appetite was very poor. Patient had lost five pounds since admission. Intelligence became even lower than on admission. There was intensely stupid expression about the face and a desire to sleep most of the time. The anæmia was progressive.

On February 9th red cell count was 4,000,000, white cells, 18,200, hæmoglobin 65 per cent. Differential count showed:—Polymorphonuclear 40 per cent., lymphocytes 13.2 per cent., large mononuclear 10.2 per cent., mast cells .8 per cent., eosinophiles 30.3 per cent., transitional and unclassified 5.5 per cent.

Stools showed occult blood with benzidene.

The eosinophilia pointed to some parasite disease and to that end the stools were examined and the ova of Hook-worm were found. The size favouring the American species 33-63 microns.

On February 14th.—Two doses of thymol were given in two hours followed by saline purge. Severe hook-worm of European type or Ankylostoma Duodenale were recovered. The males measuring 9-10 cm. long. The females 13-14 cm. long. The buccal cavity contained the characteristic double set of turned teeth. The ovula of the female was situated in the caudal third of the worm. The caudal extremity of the male shows the typical forked dorsal ray.

Unfortunately the result of the anthelmintic treatment could not be followed as the patient became suspicious of the wholesale attention he was receiving. He returned two months after discharge having gained ten pounds and had no complaints. He could not, however, be induced to remain.

I have to thank Dr. Wolbach, pathologist of the Montreal General Hospital for his assistance in finding and diagnosing the species of ovum and parasite in this case.

"CLIMACTERIC HÆMORRHAGES."

BY

JAMES ROBERT GOODALL, B.A., M.D., C.M.

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Gynecological Pathologist at Royal Victoria Hospital.

My subject for this paper has been entitled "Climacteric Hæmorrhages." Loosely taken, it might be thought to include all the diseases which lead to unnatural hæmorrhages at the time when menopause might be expected. Strictly speaking, it applies only to that disease which makes itself manifest at the climacterium, and is known under the varied nomenclature of chronic metritis, fibrous uteri, fibroid uterus, hypertrophied uterus, hæmorrhagia myopathica, etc., etc.

It is with the subject in this restriced sense that I wish to deal tonight. It is one that has interested me for years, one upon which I have spent a few years of research in the hope of eventually finding a truly scientific and plausible explanation for its obscure etiology and symptomatology. It is to this that most of my paper will necessarily be devoted, and I trust, Mr. President and Gentlemen, that you will pardon me if, at times, portions of my paper may take on something of the nature of the didactic.

There is probably no disease in gynæcology that is so little understood, both by general practitioner and gynæcologist, as that of chronic metritis. The reason, perhaps, lies in the fact that clinically it is difficult of diagnosis and that many textbooks omit it completely. In the first five recent textbooks that came to hand a few days ago, three made no reference to it whatever, one but a short note, though the fifth dealt with the subject at some length. From this it must not be inferred that the disease is an uncommon one; on the contrary it is, in my opinion, the most common cause of intractable hæmorrhage at menopause, not even excepting cancer. Last Monday four such cases came under my notice at the outpatient department of the Royal Victoria Hospital.

Let me begin by asking the question.—What is chronic metritis? It is a disease of the uterus that makes itself manifest at the time when menopause should set in: hence it begins usually between the ages of 35 and 45 years. It is characterized by but one pronounced symptom, —hæmorrhage,—excessive, often jeopardizing the life of the patient, and intractable to all therapeutic measures. It occurs in parous woman and on physical examination the characteristic signs are an enlarged, indurated uterus.

Read before the Montreal Medico-Chirurgical Society, November 5, 1909.

Before taking up the subject in detail, I would like to pass in short review the views of the previous authors. In this way a better grasp of the salient points of the disease and of the details which have been the cause of so many different tenets will be afforded. The first scientific work to appear upon chronic metritis was the monograph by Scanzoni, (1) in 1860. Scanzoni contended that the disease was always secondary to acute infection. Hence, he recognizes two stages in the progress of the pathological process, namely, the infiltrated, soft œdematous stage, and the indurative stage. The first is a necessary antecedent of the second. I cannot better compare his views than by saying that his stages are like those in acute and chronic inflammation of all other organs. He, himself, compares the process with hypertrophic and atrophic cirrhosis of the liver. In 1867 Seifert (2) and later his pupils, called the writings of Scanzoni into question and contended that subinvolution of the uterus is the chief factor in the production of chronic metritis. Writers up to this time had drawn their conclusions from naked eye examinations of their specimens, but in 1868 the microscope, though with low magnifying powers, began to be widely used. The chief subject of debate during the next few years was what tissue was responsible for the considerable hypertrophy of the uterine wall as found in chronic metritis. Finn (3) and later, Klebs (4) found that the size was due chifly to muscular hypertrophy. Birsch-Hirschfeld (5), on the other hand, contended that it was due to a marked hyperplasia and hypertrophy of both muscle and connective tissue. Of course, there was still another view possible, that the enlargement was a true fibrosis, and it was not long before strong advocates were found in von Klob (6), Kiwisch (7), and Virchow (8).

In 1870 Olshausen (9), began to show the great therapeutic value of the curette in menorrhagia and methorrhagia, and with it began the careful microscopical examination of the endometrium obtained by this means. The result was that the interest of the gynæcological world was centered upon the endometrium, and its pathological changes were held responsible for all unnatural hæmorrhages.

The pendulum had to seek its level, and in 1888, just twenty years after the last work, Cornil (10), laid stress upon the fact that there were cases that resisted the curette, hæmorrhage continuing in spite of all treatment, and that in such cases he found the arteries of the uterus sclerosed and there was a true fibrosis of the uterine wall. Ten years later the most scientific paper published up to that time, appeared from the pen of Reinicke, in which he pointed out for the first time that there is a primary chronic metritis characterized by fibrosis of the uter-

ine wall without any signs of inflammation either in the uterine wall or in the endometrium.

And so the polemic has gone on to the present day. In the last three years a revival of interest has taken place without, however, being productive of much elucidation.

Let me now take up at some length the pathology of chronic metritis, together with its ætiology. In a paper by Dr. Garrow and myself (11), read before the British Medical Association, we divided cases of chronic metritis into two distinct classes: first, simple, or uncomplicated chronic metritis, and second, complicated chronic metritis.

To this division I would strictly adhere as it offers great advantages both clinically and pathologically.

In simple uncomplicated metritis the uterus is symmetrically enlarged and indurated, but the uterus is the only pelvic organ appreciably affected, whereas in complicated metritis various associated lesions of the adnexa, parametrium and perimetrium, coexist with the metritis, and in all likelihood have sprung from the same causal agent.

If we now examine uteri excised for uncontrollable hæmorrhage at menopause, we find that the organ has retained its normal outline, but is considerably larger than normal. The degree of enlargement is very variable, but is always above the normal size. The largest specimen that has come under my notice measured four inches in depth, three and three-eights in breadth, and two and three-quarter inches in thickness. In simple cases the peritoneal surface is normal. The cervix is usually proportionately enlarged and usually contains many Nabothian cysts. The body is usually more globular than normal owing to the great thickness anteroposteriorly. On section, the cut surface is pale, anæmic, and white, shiny strands form a dense network, in the meshes of which a darker, less shiny tissue is seen. This interlacing of strands of tissue grows more marked as one recedes from the peritoneal surface towards the middle third of the uterine musculature, and they grow proportionately finer. In the outer third the lighter and darker strands, which we may now interpret as connective tissue and muscular tissue, respectively, tend to divide the uterine wall into layers. A thick white band of tissue is nearly always to be found underlying the whole of the peritoneal surface of the uterus. The vessels on the cut surface always project markedly above the surrounding tissues as if the tissues retracted about them, or that the vessels themselves were under pressure. The mucosa may be variously affected, thickened almost to being diffluent, normal, or even atrophic. The tissues cut with greater difficulty than do those of the normal uterus.

In complicated cases various lesions of the adnexa and parametrium may be added to this pathological picture. In microscopical sections of the uterine wall, extending from mucosa to peritoneum, and stained with Weigert's elastic stain, followed by hæmatoxylin, and then by Van Giesen, we find the elastic tissue stained black, the muscle yellow, the fibrous tissue red, and the nuclei purple. In such a section one is struck by the large amount of elastic tissue that is present. This increase in elastic tissue is found chiefly in the middle third of the uterine wall, about the large veins and arteries which abound in this region. But though widespread here, it is by no means limited to this area. The vessels of the inner third are also surrounded by a large amount of elastic tissue which by its arrangements and bizarre shapes about the vessels, seems to serve no definite purpose. The connective tissue and muscular elements do not seem to have lost their relatively normal proportions, but the muscle cells enveloped in such thick meshes of elastic tissue seem to have departed in variable degrees from their normal healthy appearance.

Heretofore, uteri were not studied carefully with the Weigert stain for elastic tissue and as a consequence hyaline degeneration of muscle was a prominent pathological finding in all sections of chronic metritic cases, the reason being that sections stained with hæmatoxylin and eosin, or with Van Giesen and hæmatoxylin show perivascular and extravascular masses of hyaline substance stained either pink or yellowish pink, and sparsely dotted with nuclei. These have, heretofore, been invariably interpreted as hyaline degeneration of muscular tissue These same sections if stained with Weigert's elastic tissue stain will show that this hyaline substance is not hyaline degeneration of muscle, but is dense elastic tissue.

If we now ask the question, What is the origin of this overgrowth of tissue? we ask the crucial question of this difficult subject. Let me state that the whole subject revolves about the involution of the puerperal uterus. In my opinion a woman may have an unlimited number of children and if her recoveries are complete and involution is rapid she will never suffer from chronic metritis. Chronic metritis finds its one great etiological factor in subinvolution. So the causative agents in the production of chronic metritis are numerous. Yes, just as numerous as are those whch operate in bringing about subinvolution. I would like to make the statement still more emphatic and claim that every case of prolonged subinvolution will, without exception, pass over into chronic metritis unless treated systematically and energetically.

I have never seen a true case of chronic metritis in a virgin. By

this I do not mean in a nulliparous woman, but I mean in a virgin. In the former class, i.e., the nulliparous patients, repeated slight abortions may take place without amenorrhœa and without the knowledge of the patient, and there is no more fruitful source of chronic metritis than abortion, just as there is no more frequent cause of septic trouble than abortion. Shaw (12), in a paper of three years ago, says he has seen several cases in virgins, and that they do not differ microscopically from those in the parous woman. But we have only to note that Shaw's only stain was Van Giesen, which gives no differential staining to the elastic tissue which is the all important structure. Granted, then, that subinvolution, or defective sequelæ of pregnancy are the causative agents in chronic metritis, how can the microscopical picture be accounted for?

A triple process is at work, though when thoroughly analysed the three resolve themselves into one. If we study a uterus undergoing involution we find that it builds for itself a complete new system of arteries throughout its whole walls during involution, and this takes place not only after the first, but after each and every pregnancy. The vessels that supplied the placenta are replaced completely by a new system. The old and very large vessels which supplied the placenta atrophies and during its atrophy it builds for itself out of its constituent elements a new and smaller vessel in its lumen. I regret that I can touch but lightly upon this interesting topic in the time alloted. In this placental area the disproportion in size between the old and the new vessel is very great, so that the old wall lies completely outside and beyond the new one which it surrounds. In vessels which have to undergo such enormous reduction in size the changes are readily understood, whereas in the extra-placental portions of the uterus the reduction in size which the vessel must undergo is not so great, so that the old vessel may impinge in varying degrees upon the outer portion of the media of the new one that is contained within its lumen, and a portion of the media of the old vessel may be retained to form part of the muscular wall of the new one.

In the first type, that is, in the subplacental areas, the old vessel ought to undergo complete destruction and absorption, and in the extra-placental portions the old vessels will undergo varying degrees of atrophy and disappear, as much of them being retained as is necessary to complete the new vessel wall. The least resistant tissue of the old vessel to destructive processes can be abundantly shown to be the musculature, and the more resistant is the elastic tissue, and among elastic tissues the elastica interna of the arteries is very resistant. Now, if the involution of the uterus is rapid and normal in a young woman, both these

types of tissue in the wall of the old vessel undergo rapid degeneration and absorption and leave no trace of their former existence. But, if involution is slow and retarded; if chronic disease has sapped the vitality of the patient; if acute disease has supervened during the puerperium, or if the most frequent causes, sepsis and retained products, have come into operation, remarkable and far reaching changes take place in the uterine wall. To put the matter tersely, structures that ought to have been destroyed owing to their no longer having any function to perform, remain in various stages of degenerative change, and the rule applies with all its vigor that the most highly specialized tissues suffer the most and the less specialized the least.

But the rule has also a second application which adds a great deal to our understanding of the process, and that is that the same causative factors which inhibited the degenerative and absorptive processes also inhibit regeneration of tissue, and in the same ratio, that where the most highly specialized cannot be regenerated a less specialized can be reproduced; that is, where muscle regeneration is impossible, elastic tissue regeneration is possible. Hence it is that in chronic metritic cases the uterus contains a great deal of the old vessel wall that should have been absorbed. Its musculature has almost completely disappeared, but its elastic tissue have undergone tremendous hypertrophy. The new vessel which has been formed contains varying degrees of deficiency of muscular tissue and a corresponding degree of overgrowth of elastic. In other words, where nature cannot regenerate a highly contractile tissue like muscle it supplies the next best, namely, elastic tissue.

In the reduction of the veins a somewhat similar process is at work. Hence it is that in diseased conditions which bring about subinvolution the result is a hindrance to the normal changes which take place in the uterus, and the end-product is a large uterus containing a superabundance of muscle and fibrous tissue and a relatively large amount of perivascular elastic tissue.

Marchand (13), and Jores (14), have clearly shown that, generally speaking, the 35th year of age marks an important turning-point in tissue regenerative powers of the individual. I would go still farther and say that, roughly speaking, the twenty-fifth year introduces a much more important turning-point. In the early years of life muscle is readily regenerated; to wit, how the heart hypertrophies and compensates in the young, but how injurious the same strenuous exercises of youth become to the athlete over 25 years. In children and young adolescence the arteries increase their media to meet the demands of the increasing blood pressure. At a certain time in life, roughly speaking

25 years, muscle regeneration becomes less active, but elastic tissue development is now in the ascendant, and at 35 years elastic regeneration grows less and less marked and the less specialized fibrous tissue comes into play and is found to step in where the others and more highly specialized tissues fail. To me the Jores and Marchand conception is a grand one which throws a new light upon the whole subject of arteriosclerosis In early years of life arteries increase their strength by hypertrophy and hyperplasia of the muscular media or by repeated layers of muscle and delicate elastica interna between the intima and media. These are known as the hyperplastic layers of Jores, and take place in all arteries to meet the demands of increased blood pressure. After 25 years af age regeneration of muscle becomes less and less complete, but the increase in strength of the vessel wall is now made up with increasing greater amounts of elastic tissue, until after 35 years even this specialized resillient tissue is no longer producible and the less specialized fibrous tissue begins to make its presence felt. So true is this, that I have found even in children of six to ten years of age, who have suffered for years with chronic rheumatism and chronic nephritis, muscle regeneration was almost at a standstill under such diseased conditions, and the strengthening of the vessel walls to meet the increased blood pressure was almost wholly by elastic tissue.

So it is with the uterus. In the normal young woman, filled with the vigour of health, there is complete destruction of tissues that no longer have a function to perform and a complete regeneration of muscle and a complete return to the virgin state. But how seldom the puerperium runs its course with all these favourable circumstances! In 80 uteri of parous women that I cut and examined during my work in Berlin, there were but two that returned to such a normal state that I think even the most experienced microscopist would fail to detect the difference between them and the uteri of the virgin. If, then, complete return to the normal state is so seldon in the young woman, it is a very rare finding in the woman who bears children after 35 years. The older the woman the less complete is her return to the normal, and women, as men, are as old as their arteries. Hence it is that women who are predisposed to arteriosclerosis will be strongly predisposed to chronic metritis. This is quite in accordance with our experience of cases at the Royal Victoria Hospital. From this it will be readily gathered that there are two types of arterial sclerosis in the uterus, just as there are two types in the ovaries. These are a functional sclerosis and a true arteriosclerosis.

Therefore, the causative agencies which produce subinvolution oper-

ate in bringing about chronic metritis. Moreover, the long continued and hotly contested battle between the advocates of infection and those of non-infective agencies has ceased, and both sides have won their point. That the causative factor may lie in the uterus, such as retained products, puerperal infection, etc., one can readily understand; in fact, herein will lie the chief cause of subinvolution. That the active agent can also lie outside the uterus and yet be pelvic is seen in cases of tuberculosis of the adnexa; and still further, that it may be still more remote and yet operate, not through infection, but through diminished vitality, or toxæmia, is seen in acute as well as chronic diseases.

Many works have been produced to show—and here, Gentlemen, there is unanimity of opinion—I say many works have been produced to show that acute disease supervening during the puerperium, places a "block" upon involution, and the arrest of involution will be proportionate in its completeness with the severity of the infection. That infection alone in the virgin, or nullipara, be it gonorrhœal, or tuberculous, cannot give rise to true metritis I am fully convinced, for in my experience the uterus of a virgin, or nullipara suffering from tuberculosis or gonorrhœal disease, is in the first stages enlarged somewhat but is soft and œdematous, but in the later stage is always small, indurated and fibrous.

The changes in the endometrium in chronic metritis will depend, as you can readily understand, upon the source of the causative agent, whether the trouble begins in the uterus or whether it lies extrapelvic.

As to the causes of the hæmorrhages many explanations have been advanced, none of which as yet seem thoroughly adequate. Reinicke attributes this symptom to the lack of contractility of the vessel walls; Theilhaber and Meyer (15), to the lack of power of the musculature of the uterus to contract and retract and thereby arrest the hæmorrhage. This weakness they attribute to the inhibitory influence of the fibrous tissue. The question is a difficult one and it seems that, from a functional point of view, to separate the uterine walls from the uterine musculature is quite unjustifiable.

To me it appears that the uterine contractions and retractions play the all-important part in the arrest of hæmorrhage at labour and during menstruation, otherwise the flow of blood at menstruation and after labour would be continuous instead of being intermittent. But I think also, that we must assume that the thick muscular walls of the arteries have a controlling influence in arresting hæmorrhages from the uterus. If we admit this, and I think we must, we must also admit that in chronic metritis, where both the arterial system is so loaded with elastic tissue and the uterine muscle fibres so inhibited by non-contractible

elements, the controlling influence of both these great factors will be partially or completely lost. It would be an impossibility to even guess at the relative importance of these two controlling factors, for no two cases need be alike. In this one, the arterial system would be most at fault; in that one, the vessel less and the uterine musculature more culpable.

In Dr. Gardner's and my own work, we considered another important factor in the hæmorrhage of chronic metritis, and that is ovarian function or ovarian secretion. Here, Gentlemen, we are treading upon dangerous ground. My own modest opinion is as follows: In the milder grades of chronic metritis the hæmorrhages amount to menorrhagia only; in the graver types metrorrhagia more or less intermittent comes on; in the gravest cases metrorrhagia is constant.

In all cases the organ at fault is the uterus. I mean the uterus broadly speaking, not limiting the meaning to either musculature or vessels. In the milder cases, where the loss of blood amounts only to an increase at menstruation, the uterus cannot control the amount of blood bought to it at the menstrual pelvic congestion when all the organs are so engorged with blood. In the graver cases of metrorrhagia the uterine walls are so diseased that hæmorrhage takes place quite independent of the menstrual pelvic congestion; that is, when the blood supply to the pelvis is at its minimum. When looking over the literature, I find that where ovariotomy had been performed for the relief of chronic metritis, a certain percentage of cures takes place. It is in the milder cases that the cures are found, because the exciting cause of pelvic congestion is removed by the removal of the ovaries But when hæmorrhage continues independent of menstruation,—in other words, where metrorrhagia is pronounced—the result of ovariotomy was not encouraging. Hence we may sum up in a few words that the part played by the ovaries in the production of the hæmorrhages of chronic metritis is simply the marked exacerbations of the hæmorrhages brought about by the pelvic congestion incident to menstruation. But the cause of the unnatural discharges of blood must be sought in the uterus.

Symptoms and Signs:—The one prominent symptom, for which these patients seek relief, is hæmorrhage. But let me state most emphatically that not all cases of chronic metritis are necessarily bleeders. The menstrual flow may not be disturbed in the slighest. The condition under such circumstances is generally discovered accidentally. When hæmorrhage becomes a symptom, it may be a slight increase over the normal amount or it may be very profuse menorrhagia. As a rule, the increase in the quantity of blood lost is a slowly progressive one and

may pass eventually through all the stages of menorrhagia, then intermittent, and finally constant metrorrhagia. The loss of blood may be alarming and leave the patient weak and almost exsanguinated. The blood is of a very dark colour and almost free from mucus. As a rule there is no pain whatever, except possibly a slight dragging pain in the back. Leucorrhœa is very variable, but, as a rule, a very minor symptom. The patients are multipara, usually between 35 and 45 years of age. I have never seen hæmorrhage from chronic metritis supervene once menopause had been definitely established; hence it is always before menopause. It is especially common in women who have had repeated abortions or septic puerperal troubles. I cannot pass on without a word about the frequency of chronic metritis in women who have had repeated abortions and have frequently borne dead and macerated syphilitic children.

On physical examination, chronic diseases of the other systems are frequently found, and especially to be mentioned are arteriosclerosis and nephritis. The perineum and vagina show signs of multiparity; the cervix is almost invariably involved in the same pathological state as that of the uterus. It is large, cartilaginous in consistence, and contains numerous Nabothian cysts. Lacerations are common. The uterine body is larger than normal and is very firm. It is nearly always markedly tender to pressure and not infrequently the whole of the genital tract is involved in this hyperalgesic state. In uncomplicated cases the uterus will be freely movable and lie in an otherwise healthy pelvis. But in complicated cases it may be associated with all degrees of chronic involvement of adnexa, perimetruum and parametrium.

Diagnosis:—The disease which offers the greatest difficulty in diagnosis is the case of a submucous fibrous polypus of the uterine body, which enlarges the uterus but does not destroy its normal outline. Let the tumour be the size of a pigeon's or hen's egg and the diagnosis cannot be other than tentative until operation. Under such conditions the symptoms and physical signs are exactly alike.

From chronic endo-metritis it is usually distinguished by the age of the patient and by the softness of the uterus.

In cancer of the uterine body the consistence of the uterus is not so firm; moreover, cancer of the body occurs most frequently in nulliparous patients.

From subinvolution the condition is readily differentiated by the history of recent pregnancy or abortion, and by the softer consistence of the organ.

However, there will be many cases in which nothing but the curette

will clear up the diagnosis, and, Gentlemen, in the curette we have an infallible diagnostic means. In chronic metritis the uterine cavity is always found very capacious. The tip of the curette moves about in the uterine body as if in a large empty space. The chief diagnostic sign lies in the fact that in true chronic metritis the curette brings nothing but thin blood away, and the uterus, instead of relaxing, as the normal uterus does under the curette, presents resistant walls which are firm, and the curette gives out a rasping sound when drawn with pressure over the uterine mucosa. This, Gentlemen, is without doubt the diagnostic sign of greatest value.

Treatment:—Treatment will resolve itself into, prophylactic, palliative and operative.

The prophylactic treatment will be directed towards the prevention or removal of all the conditions which leave the uterus in a state of subinvolution. That is, a more careful routine examination of the placentas and membranes to see that everything has come away; careful asepsis,—and later a careful examination into the causes of a prolonged lochial discharge; and finally, a careful examination of patients some weeks after labour to ascertain that conditions are normal. A persistent retroversion after labour I look upon as a very frequent cause of subinvolution and later of chronic metritis. But in spite of the greatest care, in spite of ideal treatment, there will be a goodly percentage of cases develop from causes over which the physician has no control.

Palliative treatment will consist in rest, both physiological as well as physical, and the use of the various ecbolics and hæmostatics. Among these may be mentioned, ergot, stypticine, ergotine, suprarenal, viscum album, and gelatine. The most I can say for these therapeutic measures is that I have seen little or no effect except that rest alone will bring about. Massage and tonics are indicated and not infrequently return of general strength is associated with a diminution of the loss of blood.

Operative treatment may be divided into minor operative measures, and the radical cure. Inasmuch as chronic endometritis may be associated with the chronic metritis, and inasmuch as when present the diseased endometrium will tend to increase the hæmorrhage, and, moreover, owing to the fact that an associated endometritis cannot be diagnosticated except by means of the curette, curettage for the relief of chronic metritis has found warm advocates. In certain types of cases doubtless the results are very great, namely, just in those cases where the endometrium is markedly hypertrophic. Shaw and Donald (16), advocate its use in all cases and claim good results. But what they call

results are very doubtful results indeed. In one of my own cases, which they take as indicative of the beneficial results of curettage, the woman was worse after curettage and nearly bled to death on several occasions before a bettering of the hæmorrhages took place exactly two years after curettage.

The course to be adopted will differ with the class of patient with whom we have to deal. My own feelings are that among the leisure classes the patient may be advised to undergo a curettage and repair of the cervix in the hope of an improvement of the symptoms. But the surgeon must never neglect to tell the patient that he is adopting a less severe measure in the patient's interest, but a measure that is not always followed by success. If the curette yields but a little or no endometrium the chances of improvement are indeed very slight and hysterectomy under these conditions is imperatively demanded. The results from hysterectomy are sure and satisfactory. As to whether the procedure will be abdominal or vaginal will depend entirely upon the nature of the case and the ability of the surgeon.

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THINGS NEW AND OLD.

BY

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Enlarged Lymph Glands as a Symptom of Pott's Disease.

Probably the most interesting observation made during the winter of 1909-1910, at either of the clinics with which the writer had the pleasure of being associated, is that in the diagnosis between dorso-lumbar Pott's disease and hip disease, an enlargement of the inguinal and iliac lymphatic glands must be sought as a symptom of the former.

Tuberculous lumbar lymphatic glands have long been recognized by orthopædic surgeons as a cause of Pott's disease. Lumbar Pott's disease may be the cause of tuberculous lumbar and iliac glands.

In early cases of hip disease it is most unlikely to see a bilateral or even a unilateral enlargement of the lymph glands, whereas in lumbar Pott's disease and in tuberculosis of the sacro-iliac such a unilateral enlargement is, the writer thinks, common, and a bilateral enlargement is certainly not uncommon in the experience of the writer.

This statement is strengthened by a study of the lymphatic system. The lumbar region has a most profuse lymphatic supply. This is associated with the iliac lymph glands, and these in their turn are associated with the inguinal glands. On the other hand, the hip joint seems to have a very limited number of lymphatics. Many anatomical textbooks fail to mention any supply at all. The writer believes that the lymphatics of the hip joint enter the deep inguinal glands. An interesting point was brought out in a talk with Dr. F. J. Shepherd, who believes that although the deep inguinal lymphatic glands may be enlarged in sympathy with an enlargement of the superficial lymphatic glands the converse is unlikely. These statements certainly tend to strengthen the clinical observation which is the subject of these lines, but, in spite of this confirmation, the observation is submitted with caution, not as a statement of belief that enlargement of these glands is, in the diagnosis between hip and spinal disease, an infallible guide, but that such should be looked for as favouring tuberculosis of the lumbar glands and, perhaps, the vertebræ, when such diagnosis is in question.

In conclusion, the fact that the inguinal glands are frequently palpable in children is brought to your notice, and that enlargement, therefore, must be associated with other signs before tuberculosis of the glands can be suspected.

The Plaster Jacket.

From a practical point of view, one of the most valuable innovations made during this winter is the plaster-splint-jacket which will now be described.

A plaster jacket is usually applied to give rest. Rest is best assured in lesions of the spine by hyperextension of that column. It is easy to get hyperextension and it is easy to apply plaster in the hyperextended position, but how often does a plaster jacket maintain its form until it is dry. It is felt that it does so but rarely in adult cases or in children who cannot be controlled, consequently we have been using a combination of a plaster brace, or splint, and a jacket. The patient is placed in the corrected position. A Hergott or other plaster splint is moulded over the spine. This is then thoroughly dried and strengthened with a couple of irons moulded at a smithy into the shape of the plaster. It is then carefully padded with felt and applied to the patient's back where it is held in position by two or three plaster bandages. If these bandages are applied in the proper place one may cut out as much of the front or sides of the jacket as is desired as long as one assures that the spine is held fixed in its position of correction to the brace which has been prepared for it.

Fig 1. It is felt that this will, perhaps, be considered the easiest jacket to apply and the surest jacket that we can employ. In the past, when it became necessary to apply a plaster jacket for Pott's disease of the cervical region, namely, to apply a plaster jacket which would include the head and neck, the work was often begun in dread, because the task was a hard and long one, even if the method described by Gallie* was pursued; and the probability was that when the operator returned to the hospital on the day following this operation, he would find that the patient had been permitted to break the jacket at the neck, its most vulnerable point. To-day the application of such a jacket is undertaken with confidence,—confidence that the corrected position of the patient will be maintained by the splint and that the jacket will be of much more comfortable and effective nature than those in the past applied under other conditions.

A New Splint for Lumbar Pott's Disease.

Great difficulty has been experienced in devising some scheme for the treatment of simple tuberculosis of the lumbar vertebræ, and of hip diseases in which there are one or more sinuses complicating the trouble. It has been said already that rest is the first principle of

* New York Medical Journal, 3rd July, 1909.

FIG. 1. THE PLASTER-SPLINT JACKET.
Note the edge of the plaster splint appearing behind the ear and shoulder. The edge of this is bound with adhesive plaster.

treatment and that this is best assured by hyperextension. Of all regions in the spine that in which hyperextension is most easily assured is the lumbar region,* and yet there is no jacket or purely spinal brace which can be trusted to maintain this. In the past some form of treatment in a position of recumbency has then been necessary, but what form has always been the problem.

The surest way to maintain hyperextension of the lumbar spine is by the application of a plaster spica. This, in the case of older children and adolescents, is the most effective treatment, but in the case of very young children or adults, it is an almost impossible form of procedure. In the former, because of one's inability to keep the patient clean, and in the latter, because not only of the irksomeness of the plaster, but because it is absolutely necessary that we should keep a constant watch over the abdomen of an adult, whose spine is in a position of hyperextension. This latter statement is made advisedly. The writer remembers two young men who were treated for Potts' disease of the lumbar region in spicas, both of whom lived many miles away from the place of residence of the surgeon who applied the plaster. One developed some pain and tenderness underneath his spica. Two or three days after this occurred the rural practitioner in charge of him telephoned about it, saying that the patient was apparently very indisposed. The consultant advised immediate removal of the plaster. The patient died two days later. The diagnosis made by his attendant was appendicitis. If the diagnosis was correct, and, perhaps it is open to question, certainly the plaster spica did not conduce to the proper observation of the patient. The second patient also died a few months after the application of the jacket. He also in the country, far from the residence of his consultant. The story told of his death suggested pulmonary embolism, but no post mortem examination was made, and no medical man was present at the last. Both of these deaths may be coincident only to the disease and its treatment, but one cannot help feeling that the surgeon who applied the plaster would have been happier if he had felt that the country practitioner in each case had had greater opportunities to watch his patient than was possible while the latter was imprisoned in plaster of Paris.

The writer has learned, also, of a patient who died from ileus following hyperextension. What this ileus was due to has not been suggested, but paralysis of the bowels seems possible from the retention of a position so foreign to that ordinarily assured.

Mr. Robert Jones' custom of employing a double Thomas hip splint

*See Montreal Medical Journal.

used in the recumbent position for the treatment of lumbar Pott's disease is a good one, and for the above reasons is especially suited in the cases of very young children and adults. There is no reason why such a splint should not be bent to assure hyperextension as well as ordinary fixation, but a much simpler method of assuring hyperextension and with it fixation is this class of patients is by employing a modification of the gas pipe frame originally suggested by Dr. Bradford of Boston.

Fig. 2. At the writer's clinics it is the custom to prepare a splint frame of gas pipe of varying diameter. This frame is divided into three portions, a body portion and two leg portions. These, as is seen in the accompaning illustration, are abducted from each other. When looked at from the side this frame is seen to form with the table a triangle, the apex of which is placed at the seat of the disease, consequently all the vertebræ above that affected lie in an inclined plane, exactly opposite to the position of all the vertebræ which lie beneath the diseased area, which also lie in an inclined plane. You will notice that the head and foot extremities are raised in order to give a basis from which to get extension. The frame is lined with canvas and the patient is fixed to it by means of a canvas apron. This frame assures fixation of the patient and will be found useful not only in these cases of Pott's disease of the lumbar vertebræ but in certain cases of cervical Pott's disease, and, indeed, wherever immobilization is desired in the treatment of a patient in whom it is necessary to be able to expose all parts.

A Brace for Congenitally Dislocated Hips.

The brace which is now presented is for the retention of a reduced congenitally dislocated hip. It was devised last November or December.

It is very well known that after the reduction of a congenitally dislocated hip the head often tends to slip into an anterior position. Whitman, of New York, laid special emphasis on this fact saying, that the head of the bone must be sought lying under the artery, and that, on the slightest suspicion of its slipping to the outside of this vessel the position of the patient's extremity must be changed. Watching for an anterior displacement has been difficult when the patient has been treated by a plaster applied in the ordinary frog position. Even if a window has been cut over the head of the femur the normal relationship of the parts is so disturbed that it is difficult to realize exactly how the case is progressing. Plaster of Paris is also disadvantageous in that we cannot see what is taking place under it. Pressure sores, and even gangrene may be hidden from view underneath this dressing. Besides these disadvantages the question of cleanliness must be remembered. How

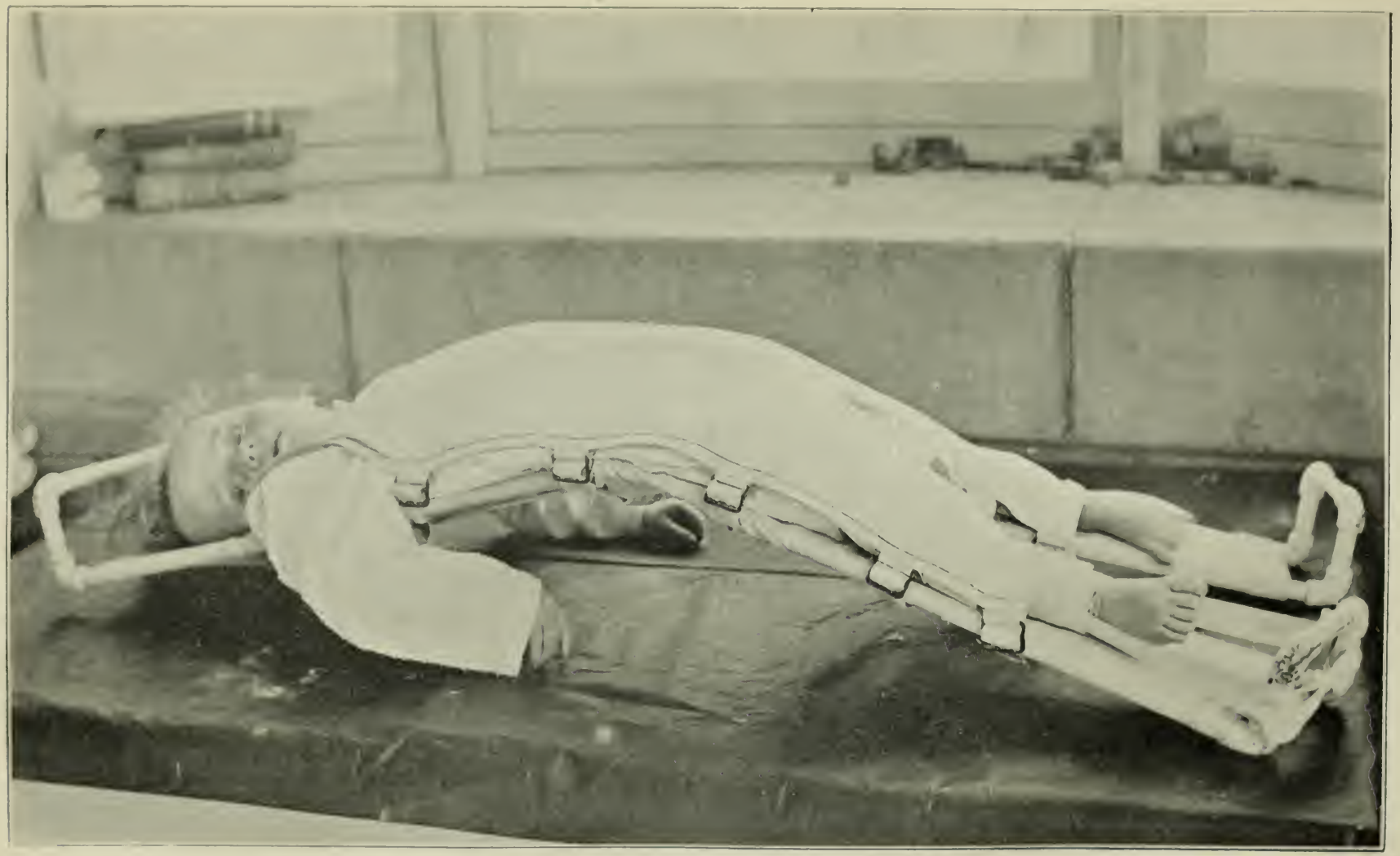

FIG. 2. A NEW SPLINT FOR LUMBAR POTT'S DISEASE.

Note that the splint forms with the table a double inclined plane which assures hyper-extension. The head and foot extremities are raised in order to give a basis from which to get extension.

FIG. 3. A BRACE FOR CONGENITALLY DISLOCATED HIP.

FIG. 4. A and B are the plaster box both open and shut. C is the plaster splint. D is a Hergott splint. F is the plaster bib used to control the head and neck in such jackets as that pictured in Fig. 1.

frequently all of us have had to take the risk of losing all that we have gained in an operation by having to change a plaster which has been soiled by the patient.

Fig. 3. The brace which is devised to take the place of a plaster of Paris dressing is a very simple one. It is really very like the double Thomas hip brace, having, like it, both a thoracic and two thigh and calf bands, and being made of much the same material, but, as you see, the relationship borne between the body portion and those of the extremities is considerably altered.

The Plaster Box.

Another suggestion made during the winter of 1909-10, is that such a box as that already shown and described in the Boston Medical and Surgical Journal, of March 3rd, 1910, should be adopted in our clinics.

This box (See Fig. 4, A & B) is for the preparation of plaster casts of the foot. It facilitates the preparation of a cast as a model on which to make a foot plate or brace for a patient suffering from weak, chronically strained or flat feet. Fig. 4.

All the preceding have been new and more or less original suggestions. Two other things of interest are now laid before you. These are not new, but are, however, of such usefulness that the writer may be forgiven for drawing attention to them.

The Hergott Splint.

There has been recently reintroduced a very old form of splint, namely, that of Hergott, who was, I think, a Parisian. This splint was brought to the writer's notice by Doctors Mercier and Parizeau in the Notre Dame Hospital here.

Its preparation is very simple. First, a pad is made by taking eighteen layers of crinoline and sewing them together. This pad is then immersed in a cream of plaster of Paris, and applied to the injured member, being held to it until it is dry, by an ordinary cotton or, preferably, a gauze bandage. When this bandage is removed the plaster is seen to have set and we have a light and durable splint which is particularly suitable for the treatment of fractures. Your attention is drawn to this splint as it is so much easier to apply than is plaster of Paris on a roller bandage.

The Van Arsdale Splint.

In the past, Canada has been wonderfully free from rickets, but, as our foreign population has been increeasing, this affection is becoming very much more common.

In walking through the wards of a hospital not long ago a child who presented the typical signs of rickets, being treated by that form of vertical extension or suspension for that form of fracture of the femur, which is so common in that affection, was noticed. It is suggested that in suitable cases the form of treatment now in vogue in the clinics with which the writer is associated, namely, the triangular splint of Van Arsdale, which was described in the Journal of the American Medical Association of December 18, 1899, by Esdant, will be considered.

The writer has been using this form of treatment for some time, and the only difficulty which has been met with has been the inability to maintain the hard splint properly opposed to the anterior surface of the patient's body: Then, again, the rounded thigh to the straight splint. This treatment has, consequently, been slightly modified. The patient has a long, rudder-shaped Hergott plaster applied to his abdomen and thigh. This, when dried, is used as a support in which to maintain the triangular splint, which, in its turn, assures the integrity of the plaster. The application of this splint is very well shown in the photograph accompanying this note, Fig. 5, which is taken of a child who is suffering from such fracture, and who is now presented after four or five weeks' treatment to show the efficacy of this form of immobilization.

Fig. 5.

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CANADIAN MEDICAL ASSOCIATION.

For the 43rd annual meeting of the Canadian Medical Association, Toronto, on the 1st, 2nd, 3rd, and 4th of June, transportation arrangements are in force on the standard certificate plan, with the exception of British Columbia where the regular summer tourist rate will prevail. All intending delegates should consult with their ticket agents when purchasing first class transportation to Toronto as to rates, dates of sale of tickets, time limits, and routes. For these purposes the Association and the Canadian Dental Association are coupled; and fare will be single for going and returning if three hundred are present at the two conventions holding standard convention certificates, between Halifax and other Eastern points and Laggan and Coleman, B.C. The first general session will be held on the afternoon of the first day, when the President-elect, Dr. Adam H. Wright, Toronto, will be installed in office and the opening ceremonies will take place. Following this, there will be a report of the Milk Commission by the chairman, Dr. Chas. J. Hastings, Toronto, and addresses by Dr. Evans, of Chicago; Dr. North, of New York; and others. On the evening of the first day, Dr. Herringham, of London, England, will deliver the address in medicine, which will be followed by the discussion on Dominion registration. The sections which have exceptional programmes will meet in the forenoons. On the afternoon of the second day, Thursday, there will be an excursion to Niagara Falls, and a dinner at the Clifton House. The address in surgery will be delivered Friday afternoon by Dr. Murphy,

of Chicago, followed by a symposium on ex-opthalmic goitre, and at 5.30 p.m. the annual meeting of the Canadian Medical Protective Association will be held. Friday evening the address in obstetrics will be given by Dr. Henry Coe, of New York, followed by a symposium on the psycho-neuroses. A general session will be held Saturday forenoon and about eleven an excursion will be taken to Guelph to visit the Ontario Government institutions.

HEALTH IN THE WEST INDIES.

Sir Rubert Boyce has published a book which is the result of two journeys made, in 1905 and 1910, to the West Indies in order to advise means for the prevention of yellow fever in the British possessions there. He has compiled some very interesting information from the records of disease in the British West Indies. It is most instructive to compare the old records with those of the present day. In 1802, at Fort Charlotte, near Nassau, in the Bahamas, the 7th Fusiliers lost 220 men out of 300 within a few weeks; in the following year yellow fever broke out once more among the remainder of this regiment and almost every man died. At the present time the West Indies are looked upon as a health resort. This enormous alteration has been brought about by the change in conditions which has killed off the mosquitoes trassmitting yellow fever. In his book "Mosquito or Man," Sir Rubert has reviewed with great fullness the means by which mosquito-borne disease can be prevented and the methods by which mosquitoes can be destroyed. In the present volume he confines himself to the results which the application of these measures has achieved in the colonies visited by him, and he contrasts the conditions which existed before their enforcement with those which obtain at present.

Attention is repeatedly drawn to the fact that the introduction of a pipe-borne water supply has often been one of the most important factors in reducing the incidence of malaria and yellow fever, because its existence makes it unnecessary for the inhabitants of the town to store water, and hence, the number of collections of water in which mosquitoes may breed has been greatly reduced.

Examples of the legislation enforced in several tropical communities for the prevention of mosquito breeding are given in the appendix. In the body of the work Sir Rubert makes suggestions concerning the form which sanitary regulations should take in tropical countries. One of the most important, of course, is that it should be illegal for mosquitoes to be allowed to breed upon the property of any household. Atten-

By Sir Rubert Boyce, F.R.S.; published by Sir John Murray. Contents: pp. 1-249; appendices and index: pp. 253-322. 47 illustrations and 1 map.

tion is drawn to the absolute necessity of obtaining public recognition of the importance of such measures and of securing the active co-operation of the citizens in their maintenance. People who live in the tropics must learn to understand that a single, uncaptured, infected *stegomyia*, capable of transmitting yellow fever, is far more dangerous to them than any mad dog could be.

Public men, and the clergy of all denominations, can do much towards spreading a knowledge of the methods of prophylaxis against mosquito-borne disease; but the successful sanitation of a tropical town must always depend upon the appointment of an efficient and well trained medical officer of health, in whose care shall be placed the responsibility for maintaining the public health of the community by which he is employed.

Attention is drawn to the enormous economic importance of the new hygiene of the tropics. Costly quarantines are no longer necessary, and the loss of life and the dislocation of business, caused by an epidemic of yellow fever can no longer occur.

An extremely interesting point is well shown by the incidence of cases of yellow fever in the Barbadoes; that is, that the negroes who have not been exposed to infection by yellow fever in their childhood, are just as susceptible to that disease as are Europeans. It has consequently been shown, once again, that negroes have no race immunity against yellow fever. A passing allusion is made to the existence of ankylostomiasis, and to the methods of preventing and treating this disease. The existence of plague on the Pacific Coast of America is mentioned, and warning is given of the danger lest it be introduced by way of Venezeula into the British West Indies.

While the book should be read by everyone who is interested in the sanitation of the tropics, it will prove of particular value to those living in the British West Indian possessions which were visited by the author because the local conditions have been described, and sometimes criticised in detail.

THE PROFESSOR OF ZOOLOGY.

As successor to Professor E. W. MacBride, in the Strathcona Chair of Zoology, the Governors of McGill University have appointed Mr. Arthur Willey, F.R.S. Dr. Willey comes to the University highly recommended by such authorities as Sir E. Ray Lankester, K.C.B., Professor Adam Sedgwick, Imperial College of Science, London, and Professor J. Graham Kerr, University of Glasgow.

Professor Willey, who is at present Director of Colombo Museum, and

Marine Biologist, has a long line of distinctions, scholastic and otherwise to his credit, which we summarize for convenience of record.

1889: First visit to Peloro Faro, near Messina, at the instance of Professor E. Ray Lankester (University College, London), assisted by a Royal Society grant, to collect material for the study of the development of amphioxus. 1890: Second visit to Peloro Faro under the same auspices to continue the same work. 1891: Matriculated at the University of Feriburg-in-Breissgau. 1891-2: Table of British Association at the Marine Laboratory, Plymouth; and at the Stazione Zoologica, Naples. 1892-4: Tutor in Zoology, Columbia College, New York, under Professor E. B. Wilson. 1894: D.Sc., London. 1894-9: Balfour student of the University of Cambridge (three years extended to five years). 1899-1901: Lecturer on Biology at Guy's Hospital Medical School (succeeding Professor E. A. Minchin and followed by Mr. Richard Assheton). 1901: Three lectures on amphioxus, etc., at the Royal Institution (January 17th, 24th and 31st). 1902: Fellow of the Royal Society of London, and before this time (1899) Life Member of the Cambridge Philosophical Society. 1902 to date: Director of the Colombo Museum. 1902-7: Lecturer on Biology at the Ceylon Medical College (relinquishing this appointment to take up the next). 1907 to date: Marine Biologist to the Ceylon Government. Honorary Appointments: M.A. Contab., 1898; Corr. Member of the New York Academy of Sciences, 1897; Emeritus Lecturer, Ceylon Medical College, 1907; Vice-President Ceylon Branch, Royal Asiatic Society. Principal Publications:— 1891: Later Larval Development of Amphioxus; for review see *Nature,* 1891, vol. 44, July 2, pp. 202-4. 1894: Amphioxus and the Ancestry of the Vertebrates; Columbia University Biological Series; for review see *Nature,* 1895, vol. 51, March 7, pp. 433-4. 1898-1902: Zoological results based on material from New Britain, New Guinea, Loyalty Islands and elsewhere, collected during the years 1895 to 1897; for review see *Nature,* 1905, vol. 71, March 2, pp. 411-12. 1901: Articles "Amphioxus" and "Balanoglossus." Encyclopedia Britannica, 9th edit. Supplement. 1903 to date: "Spolia Zeylanica"; a quarterly publication issued at his initiative by the Ceylon Government.

THE McGILL REUNION.

A reunion of the graduates of McGill University in the Faculty of Medicine is planned for June 6th and 7th, 1910, upon the occasion of opening of the new medical buildings and the annual convocation for conferring degrees. Invitations have been sent to all graduates, and a large attendance is already assured. The class reunions will be a fea-

ture of the ceremonies. All but a few of the forty-five years represented by the alumni have already arranged for them.

Following is the programme:—

Monday, June 6.—Informal luncheon at the McGill Union by members of teaching staff of the medical department to the graduates in medicine.

Afternoon.—Convocation in Royal Victoria College.

Evening.—Opening of new building. Conversazione given by the Governors of the University.

Tuesday, June 7.—Morning and afternoon—clinics and demonstrations in hospitals and laboratories. Private entertainments.

Evening.—Banquet tendered by the members of teaching staff of the medical department to the graduates in medicine.

Class Reunions—At times to be arranged.

The Governors have arranged a conversazione and the Governor-General will attend the banquet and luncheon.

There is also a ladies' committee, which will entertain the wives and daughters of the reunionists.

The following committees have been appointed:—

Dinner.—Dr. G. E. Armstrong, Dr. J. G. Adami, Dr. W .W. Chipman and Dr. W. L. Barlow.

Publication.—Dr. J. C. Simpson, Dr. J. G. Adami, Dr. A. Macphail and Dr. J. L. Todd.

Class Reunions.—Dr. J. W. Scane, Dr. J. A. Henderson, Dr. W. M. Fisk.

Finance.—Dr. H. S. Birkett, Dr. A. Hutchison, Dr. A. C. P. Howard, Dr. J. G. McCarthy and Dr. W. G. Turner.

Conversazione.—Dr. R. F. Ruttan, Dr. J. G. Adami, Dr. W. W. Chipman.

Lunch and Reception.—Dr. F. G. Finley, Dr. J. A. Hutchison.

Special Convocation and Addresses.—Dr. J. Bell, Dean F. J. Shepherd, Dr. W. W. Chipman, Dr. E. W. Archibald.

TUBERCULOSIS IN ANIMALS.

It seems desirable that the public should be given opportunity to know what the International Commission on Control of Tuberculosis Among Domestic Animals is doing, as the commission represents indirectly the Canadian and United States Governments. The last session, held in Detroit, was devoted largely to reports. There were present representatives of Canadian and American breeders, Canadian and United States Departments of Agriculture, American and Canadian vet-

erinarians. The following reported:—Committee on Education and Legislation; Committee on Location of Tuberculosis in Cattle; Committee on Dissemination of Tuberculosis; and the Committee on Disposition of Tuberculous Cattle. The Committee on Education and Legislation made a partial report presenting a critical study of experience of certain States in their efforts to deal with this problem. The purpose of this was to present full information for the Commission concerning mistakes and failures, and comparative successes of communities that have undertaken serious work with tuberculosis.

The Committee on Location of Tuberculosis in Cattle presented their report under such headings as "Provision for Notification"; "Location by Tuberculin Test"; "Location of Infected Herds Through Meat Inspection Service"; "Most Important Sources of Animal Tuberculosis."

The Committee on Dissemination of Bovine Tuberculosis presented its study under such headings as "Introduction of Disease into the Herd"; "Dissemination by Feeding to Calves"; "Dissemination by Contact at Shows"; Dissemination by Placing Healthy Animals in Contaminated Stables"; "Dissemination by Transportation of Healthy Animals in Infected Cars"; "Dissemination by Pasture Exposure." The discussion on this report gave considerable attention to the problem of tracing back from the killing floor to the infected farm with a view to detecting the diseased herds and concentrating control work as much as possible on diseased herds.

The Committee on Disposition of Tubercular Cattle reported concerning the necessity of accepting tuberculin for diagnosis as a fundamental: the necessity of voluntary co-operation; and the superiority of voluntary co-operation to measures of compulsion. This committee considered the feasibility of the Bang and Ostertag methods of dealing with tubercular herds under American conditions. It also made recommendations concerning the relation of indemnity to final disposition of carcass; the principle of carcass salvage; the obligatory disposal of all clinical cases; and a study of the conditions which should determine the disposition of reacting cattle.

A very considerable amount of discussion on this report was given to the question of remuneration for owners, and particularly as to whether this should be regarded as a temporary or as a permanent provision in tuberculosis control work. A number of members held that it must necessarily be considered as a useful preliminary and temporary measure.

Careful consideration was given to the possibility of making either

the Ostertag or Bang method of dealing with tuberculosis in the herd, or a combination of the two, feasible in America and Canada for grade herds. This is intended to find some method more economical than slaughter for as many herds as possible. The next meeting of this International Commission will be held in Ottawa.

M. H. R.

THE INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.

In connexion with the Congress of American Physicians and Surgeons at Washington, D.C., on May 3rd and 4th next, a meeting of a smaller body is to take place that promises to be of so much interest as to be worthy of the editorial comment. The International Association of the Medical Museums is not affiliated with the Congress, for this is formed only of *national* societies, but it meets in conjunction with this body for the convenience of the members. This association, which had its origin in a suggestion made by the late Prof. Wyatt Johnston, was organized in 1907 by the joint action of the late Dr. James Carroll, curator of the Army Medical Museum, Washington, D.C., Prof. M. G. MacCallum, of Baltimore, and Dr. Maude E. Abbott, curator of the Pathological Museum, McGill University. It aims at the development and the fostering of the museum idea, at the improvement of museum technique and arrangement, the development of the system of museum teaching, and the establishment of an international system of exchange of specimens. It is an association of institutions rather than of individuals, and although any person interested is admitted to membership on election and the payment of the annual fee, the vote is confined to those members officially accredited to museums or laboratories as their voting representative. The inception of this association has been greeted with real enthusiasm both at home and abroad, as supplying a need that has been felt, and its membership now numbers officials of nearly all the leading medical museums throughout the world. The programme of the coming meeting, on May 3rd and 4th next, is so representative, and of so much interest that it illustrates better than words can do, the growth and rapid development of this youthful association, the successful future of which is now assured. It is but just to state that its successful organization is due almost entirely to the initiative, energy and capacity of Dr. Abbott, and that the credit of establishing the association on a secure basis belongs, therefore, in a large degree to the medical museum of McGill University.

Programme of The Third Stated Meeting International Association of Medical Museums.

New Williard Hotel, Washington, D.C., May 3rd and 4th, 1910.

Part I.

Tuesday, May 3rd, 2.30 p.m.

Transaction of Business:—

Reading of Minutes; Election of New Members; Changes in Constitution; Election of Officers.

Reports:—

Secretary's Report with statement of Exchanges made, and publication of new specimens requested.

Discussion:—

"On the methods of making this Association of the greatest value to its members, and on the development of the International System of Exchange." Led by Major F. F. Russell, Army Medical Museum.

"On the advisability of establishing an European Section." Led by Prof. J. G. Adami, McGill Uuiversity, Montreal.

"On the feasibility of establishing an Index Pathologicus." Dr. Maddox, Cleveland, and Dr. Maude E. Abbott, Montreal.

"On methods of preservation of specimens in which natural colours have been retained. Effects of light, heat, etc., on these."

Papers:—

Further remarks on the preservation of anatomical specimens with natural colours. Illustrative specimens will be on view at the Army Medical Museum. By Prof. Edmond Souchon, Tulane University, New Orleans, La.

Note on methods of preparing permanent specimens of the anatomy of the middle ear and accessory sinuses of the nose. Illustrated by specimens. Dr. Hamilton White, Montreal.

Note on the preparation of specimens of miliary aneurysms of the cerebral arteries by the Schuttel method. Dr. Ludwig Pick, Berlin, Germany. Presented by the Secretary.

Part II.

Wednesday, May 4th, 2.30 p.m.

Demonstrations and Papers upon points of interest in connexion with Museum teaching, technique. or arrangement, as follows:—

On the value of public Medical Museums, and on the possibility of establishing such a museum in each of the larger cities. Prof. W. G. MacCallum, College of Physicians and Surgeons, New York.

On the teaching of Pathology by Kaiserling specimens. Dr. Guthrie McConnell, St. Louis, Mo.

On the teaching of Pathology by the Case System. Supplemented by gross and microscopic specimens. Dr. Thomas Ordway, Bender Hygienic Laboratory, Albany, N.Y.

On the teaching value of enlargements of Microphotographs. Prof. A. S. Warthin, Ann Arbor, Mich.

Exhibition of series of micro photographs illustrating the principles of tumour classification. Prof. F. B. Mallory, Boston, Mass.

On the value of Lumiere polychrome photographs for demonstration and reproduction purposes. Dr. Harvey R. Gaylord, New York Cancer Laboratory, Buffalo, N.Y.

Demonstration of specimens illustrating the preservation of the results of research for medical museums:—

(*a*) Specimens showing experimental work on the production of the normal placenta. Prof. Leo. Loeb, University of Pennsylvania, Philadelphia, Pa.

(*b*) Specimens showing results of experimental pneumonectomies in rabbits. Dr. E. M. von Eberts, Montreal.

On the permanent tagging of Museum specimens. E. L. Judah, McGill University.

Demonstration of a metal mold of a glass dish for mounting Kaiserling specimens in gelatin. Dr. J. H. Hewitt, Georgia State Sanitarium.

Demonstration of the gelatin method of mounting specimens, with illustration of some new points. Dr. Joseph Kaufmann, Montreal.

Reviews and Notices of Books.

NEUMANN'S "CEREBELLAR ABSCESS." By RICHARD LAKE, F.R.C.S. H. K. Lewis, London 4/.

Under this title, a very good translation of Neumann's monograph on otitic cerebellar abscess has been published. The work is based on the study and analysis of 196 cases of cerebellar abscess of otitic origin collected from the literature from 1900 to 1905 and observed in the Politzer clinic during the same period. Statistics of other authors are given by way of comparison, and on general lines are found in agreement wth the present series. It was found that the relative frequency of cerebellar and temporal lobe abscesses was about 1 to 2. As regards the source of infection it is usually a chronic suppurative otitis complicated by the development of cholesteatoma: in about one-tenth of the cases the infection followed an acute otitis.

The chief interest, perhaps, centres about the diagnosis which is dealt with at some length, and in a clear and comprehensive manner. A serious difficulty in diagnosis is the presence of some other intracranial involvement such as an extradural abscess or sinus thrombosis. In a fairly large proportion of cases the cerebellar abscess is a sequel to a suppurative labyrinthitis which may in itself give rise to the symptoms of cerebellar involvement, or, on the other hand may mask its presence. In such a case the careful functional examination of the labyrinth is of the greatest importance and may be the key to the diagnosis. The greatest assistance is obtained, also, by the study of the character of the nystagmus and its variation as the disease progresses. In a doubtful case, where labyrinthitis is present and cerebellar abscess suspected, Neumann points out that a diagnosis is often impossible, and, therefore, advises dealing with the labyrinth only at first, and waiting for a time before exploring the cerebellum. Where the cerebellum is explored he advises a free incision rather than an exploratory puncture and aspiration. Not a few cases have been diagnosed at operation, and these cases, come upon during the latent period, give, of course, the best prognosis.

As regards prognosis, the statistics show a very good proportion of cures considering the grave nature of the lesion (about 25%). It is of course, to be remembered that cured cases are more apt to get into the literature than those ending fatally, however, the cases drawn from the Politzer clinic showed the same proportion, namely, 7 cures in 28 cases. The work has been most carefully prepared, and the translation is most satisfactory. We, therefore, warmly recommend it to all interested in the subject. E. H. W.

MEDICAL DIAGNOSIS. A MANUAL FOR STUDENTS AND PRACTITIONERS. By CHARLES LYMAN GREENE, M.D. Pages 725, 7 colored plates and 248 illustrations. Third edition. Price $3.50 net. P. Blakiston's Son and Company, Philadelphia. 1910.

As its name implies, the work is mainly intended for students and practitioners, and the fact that the book is now through the press for the third time is, in itself, evidence of its merit. All through this edition, which has been considerably re-written and re-arranged, one can see that the author has taken great pains to deal at some length with the most important and most practical of modern clinical methods, while nearly all of the most recent diagnostic procedures of value have received some attention. The coloured plates are good, but a large number of the illustrations are only fair. For its size, the book presents this vast subject in a very useful and practical manner.

MANUAL OF MIDWIFERY. By HENRY JELLETT, M.D., ETC. Published by Ballière, Tindall & Cox, London.

This second edition of Jellett's work, containing the teaching of the Rotunda Hospital, at Dublin, is quite up to the standard of its predecessor. It has been improved by the addition of a new series of drawings of the anatomy of the pelvis in relation to the subject in which the Dublin School has deservedly become famous, and also by the addition of good plates illustrating the mechanism of labour. An excellent and useful change which has been introduced is gathering together into one group the chapters on acute yellow atrophy of the liver, pathological vomiting of pregnancy, and eclampsia under one head, which is very appropriately termed "The auto-intoxications of pregnancy." The chapters on the actual cutting operations which may be required in order to effect delivery have been brought well up to date, and the use of scopolomine-morphine anæsthesia during labour is clearly described and intelligently discussed, the author being very conservative in his praise of the method. The book is well written and illustrated, the illustrations being clear and convincing, and the publishers' work is admirable with one exception. That exception is the binding which is not in keeping with the excellent material which the author has provided for its interior. Even with this defect, which after all is not of vital importance, Dr. Jellett's book can be recommended to both student and general practitioner; and the author is to be congratulated on his production.

THE PROPAGANDA FOR REFORM IN PROPRIETARY MEDICINES; Sixth Edition: Containing the various exposés of nostrums and quackery which have appeared in *The Journal of the American Medical Association*. Price, Paper, 10 cents; Cloth, 35 cents. Pp. 292. Illustrated.

This book presents in convenient form most of the exposures that have appeared in THE JOURNAL of the American Medical Association showing fraud either in the composition of various proprietary preparations or in the claims made for them. Many preparations of the "patent medicine" type have been subjected to analysis and the results appear in this volume. The book will prove of value to the physician in two ways: It will enlighten him as to the value of many of the so-called ethical preparations on the market; and it will put him in a position to answer intelligently questions that his patients may ask him about some of the widely advertised "patent medicines" on the market. After reading the reports published in this book physicians will realize the value and efficiency of simple scientific combinations as compared with many of

the ready-made proprietary articles. The volume is a sad commentary on human credulity.

Spa Treatment. By Neville Wood, M.D., M.R.C.P. Messrs. Adlard and Son, London, 1910.

Readers of *The Practitioner* will remember a Special Number which was edited by Dr. Neville Wood, in July, 1908, and contained an account of many health resorts with indications of the benefits which might arise from treatment at those places. The present monograph of 58 pages appears to be a summary statement of the observations made at that time. By actual count 57 European Spas are referred to, some in terms which are not entirely complimentary, especially when the author is dealing with some of the French watering places. There is a gentle current of satire running through the book, which broadens out occasionally into humour, as where Schlangenbad is recommended as particularly soothing to the ill-tempered. It is said to be much patronized by near relatives of medical men. The impression left upon one's mind by a reading of this book is that the best spas are those which have the best physicians.

The Nurse's Guide to Prescription Writing. By J. G. H. Published by E. & S. Livingstone, Edinburgh, 1910.

We must confess to a lack of understanding of this book, small though it is. It appears to be quite useless.

Anatomy and Physiology for Nurses. By LeRoy Lewis, M.D. Second edition. W. Saunders Company, Philadelphia, 1910. Canadian Agents, The J. F. Hartz Company, Toronto.

A book published by Saunders, which has gone into a second edition, must have its value and its devotees. Dr. LeRoy Lewis has conferred upon South Bend, Ind., a distinction somewhat similar to that which Burnley owes to James MacKenzie. The second edition is a more complete work of anatomy than the first, as, "in response to a general demand among those who have used the book a chapter on the male organs of generation has been added." We cannot refrain from the comment that nurses who depend for information entirely upon this chapter will be quite inadequately instructed. The anatomy, even of organs less highly specialized, cannot be learned from a book. However, it is proper that this zeal for knowledge should meet with encouragement.

The Pocket Clinical Guide. By James Burnet, M.A., M.D., M.R.C.P.E. John Currie, Edinburgh, Scotland, 1910.

We mention this book of 140 pages, measuring 2¾ x 4 inches, and

weighing less than 2½ ounces, merely because it is an expression of the extreme degree of folly to which the making of "digests" may attain. A physician who is so ignorant as to need this book is too ignorant to use any book to advantage.

SYMPTOMS AND THEIR INTERPRETATION. By JAMES MACKENZIE, M.D., M.R.C.P., Physician to the West End Hospital for Nervous Diseases, London, author of "Diseases of the Heart," etc., etc. Toronto: D. T. McAinsh & Co., 297 pages, illustrated, price $2.25.

A careful reading of this book conveys the impression that the practice of medicine is a business which is not to be undertaken lightly. The author disproves so many things which have been matters of settled belief that one is disposed to wonder how much of reality yet remains. Dr. Mackenzie has gone to the facts. For him any other authority does not exist. Indeed, "the authorities" fare badly in his hands. His method is a reversion to the old school of experience, not of animals in a laboratory, but of patients in their beds. Pain is a universal experience, and he begins with the manifestations of it. He establishes the fact that the visceral organs are non-sensitive in themselves but cause pain reflexly in the most unexpected places, that is, if one does not understand the distribution of the cerebro-spinal nerves. He assures us, too, that the serous membranes, the peritoneum included, are all insensitive, with the single exception of the tunica vaginalis, and that because this membrane is supplied by a twig of the genital branch of the genito-crural nerve. Physicians who speak of "tender" ovaries, livers, testicles, would do well to revise their nomenclature as well as their habit of thought. Dr. Mackenzie has demonstrated by his own career that the highest place in medicine belongs to the physician as apart from the "laboratory worker," and that the lessons of experience may not be neglected. In 1878 Dr. Mackenzie graduated from Edinburgh University, and was immediately appointed assistant to the Professor of Clinical Medicine. In 1879 he resigned that position and took up general practice in Burnley, a town in the north of England. Here he remained for 28 years as a general practitioner. During all this time his closest attention was given to the subject of "symptoms," very many of his cases being under observation for a number of years. In 1907 he removed to London, where his fame as a diagnostician had already preceded him, and where, in less than two years, he brought out through the Oxford Press, his great work "Diseases of the Heart," already reviewed in these pages.

A Handbook of Medical Diagnosis in Four Parts. By J. C. Wilson, A.M., M.D., Professor of the Practice of Medicine and Clinical Medicine in Jefferson Medical College and Physician to its Hospital; Physician to the Pennsylvania Hospital; Physician-in-Chief to the German Hospital. Octavo of 1,435 pages, with 408 text illustrations and 14 full page plates. Publishers: J. B. Lippincott Company, Philadelphia and London. Charles S. Roberts, Montreal, Canadian agent.

Dr. Wilson's new book, to use his own words in the prefatory note, "is the outcome of many years devoted to work in the wards with the controlling side lights upon bedside diagnosis afforded by the clinical laboratory, revelations at the hands of surgical colleagues in the operating theatre and confreres in pathology in the post-mortem room, the frequent opportunity of seeing unusual and grave cases in consultation, and long experience as a teacher."

The book is divided into four parts "with a view of simplifying the arrangement of the topics in a Department of Medicine which have attained large scope and insistent importance. Briefly one may mention the headings of these parts:—

Part I. (53 pages) deals with medical diagnosis in general; Part II. (336 pages) the methods and their immediate results; Part III. (216 pages) symptoms and signs; Part IV. (808 pages) the clinical applications.

In the first part devoted to general conditions of medical diagnosis, the author discusses the direct and indirect methods of diagnosis, medical topography, examination of the patient, and case taking. This is carried out in a clear and concise manner with abundant illustrations both verbal and diagramatic.

The second part opens with a few pages describing medical thermometry and chart making. Before taking up the methods of examination of the different systems, details of which occupy the largest portion of this section, physical diagnosis is defined and described. In introducing this part of his subject, the author makes, among others, two very important statements which may be repeated here: "More errors in physical diagnosis arise from want of system than from want of knowledge. * * * a long apprenticeship in the post-mortem room is an essential preparatory course for good work at the side of the bed."

That portion of the work devoted to symptoms and signs, comprising the third part, contains a clear yet brief discussion of the various general symptoms and signs common to diseased conditions of each system.

The fourth part, over 800 pages—considerably over one-half the

book—is taken up with the clinical applications of the teachings in the former part of Dr. Wilson's excellent work. Part IV. is a Practice of Medicine with the treatment left out. "Clinical applications" might have been written, quite as well, we think much better were the definitions of disease and the etiology of disease and details of symptomatology left out entirely. Again, we urge that the complications and sequelæ of a disease can afford but little aid in the diagnosis of that malady save in a few instances.

We have already spoken of Dr. Wilson's book as an excellent work. It is original in its plan. It is well illustrated with original plates and photographs appearing for the first time. The whole book speaks of the author's wide and careful observation in the clinic, laboratory and post-mortem room, and of his high appreciation of the needs of the student and the practitioner. Without discussing details such as the omission of this test or that sign, valued highly by some and less by others, we are convinced that Dr. Wilson has written an excellent work which will prove most helpful to both student and practitioner.

W. F. H.

Medical News.

THE ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION

The annual meeting of the Canadian Medical Association will be held at Convocation Hall, University Grounds, the first four days in June. As usual, various manufacturers and agents will have exhibits displayed for the inspection of the Canadian Medical Profession.

The Waterbury Chemical Company, Limited, Toronto, Canada, will not only have an exhibit in the rotunda of the building in which the meetings will be held, but also wishes to announce that they will take great pleasure in receiving at their laboratory, 34 Beverley Street, any one who would care to call or is interested in investigating the well known products of this Company.

MILK COMMISSIONS.

The fourth annual meeting of The American Association of Medical Milk Commissions will be held at the St. James Hotel, St. Louis, on Monday, June 6, 1910.

The programme committee reports that the following have agreed to be present and contribute:—Dr. M. P. Ravenel, of the University of

Wisconsin; Prof. W. A. Stocking, Jr., of Cornell University; Commissioner R. A. Pearson, Albany; Assistant Surgeon-General Kerr, Washington; Dr. E. C. Schroeder, United States Department of Agriculture; Dr. Henry L. Coit, Newark; Dr. Collins H. Johnston, Grand Rapids, Among the subjects thus far assigned are:—"The Essentials Underlying the Production of Clean Milk," "The Bacterial Content of Milk from Cows Continuously Stabled," "The History, Development and Statistics of Milk Charities in the United States," "The Advantages, the Limitations and Some of the Results of Milk Charity Work," "The Production of Certified Milk." The president is Samuel McC. Hamill, M.D., 1822 Spruce Street, Philadelphia, and the secretary Otto P. Greier, M.D., 124 Garfield Place Cincinnati.

CANADIAN MEDICAL ASSOCIATION 43RD ANNUAL MEETING.

Provisional Programme.

The place of meeting of each session will be plainly marked on the plan at the entrance to Convocation Hall, and admission to each will be by ticket only.

The exhibits of the various sections, and by leading manufacturers of articles of interest to the profession, will be placed in the approaches to Convocation Hall and the Official Bureaus of the Association.

The Queen's Hotel will be the headquarters of the Association. Delegates should make reservation immediately.

The fee for membership is $5.00. Pay to treasurer, Dr. H. B. Small, Ottawa, at any time. New members should apply at meeting when registering for Application for Membership forms. They must be recommended by two members of the Association. The transportation arrangements apply to them as to members.

On the afternoon of Thursday, 2nd June, there will be an excursion by steamer Turbinia to Port Dalhousie; thence by electric railway to Niagara Falls. Refreshments on boat; dinner at the Clifton House; returning to Toronto in evening. There will also be an excursion by special C.P.R. train to Guelph, as guests of the Guelph Medical Society, to visit the Ontario Government institutions, and other points of interest, leaving Toronto at 11 a.m. on Saturday.

The General Secretary, Dr. George Elliott, 203 Beverly St., Toronto, will be pleased to furnish promptly any further information required.

The annual meeting of the Canadian Medical Protective Association will be held on Friday afternoon at 5.30 p.m., when its president, Dr. R. W. Powell, Ottawa, will submit his annual report.

This discussion will be introduced by Dr. Roddick on the evening of the first day, following the address in medicine.

In addition to the Presidentian Address, there will be one in Medicine by Dr. Herringham, of London, England; one in Surgery by Dr. J. B. Murphy, of Chicago, and a third in Obstetrics by Dr. Henry C. Coe, of New York.

The Milk Commission will report on the afternoon of the first day, and several leaders in this field from the United States will contribute to the discussion.

Two Symposia have been arranged, to which the various sections will contribute: one on Exophthalmic Goitre, the medical aspect of which will be treated by Prof. McPhedran, of Toronto; the Surgical by Prof. F. J. Shepherd, of Montreal; and the Pathological by a physician from New York; and another on Psycho-Neuroses, of which Drs. J. J. Putnam, of Boston, August Hoch, of New York, W. Hattie, of Halifax, and Ernest Jones, of Toronto, will each present various aspects.

Medical Education will be dealt with by Prof. J. C. Connell, of Queen's University, Kingston.

All of the above will be given in the Convocation Hall during the afternoon or evening sessions before all the members.

There will be Sections in Medicine, Surgery, Obstetrics, and Gynecology, Pathology, Pediatrics, and Diseases of the Eye, Ear, Nose and Throat. These will be held each forenoon. Most extensive programmes have been prepared for each, some seventy papers in all being already promised. These Sections in Medicine, Surgery, Obstetrics and Pathology will each hold three morning sessions, commencing at 9.15 on Wednesday the first day of June. The attention of members is especially called to the hour of meeting so that there may be no disappointment. The section of the Eye, Ear, Throat and Nose, and the Section on Pediatrics, will each hold one session only, viz., Thursday the second of June.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The eleventh regular meeting of the Society was held Friday evening, March 4th, 1910, Dr. W. Grant Stewart, President, in the chair.

LIVING CASES: INJURIES TO THE BRACHIAL PLEXUS.

D. A. Shirres, M.D., exhibited five cases which he had under treatment. These cases will be discussed at length in a paper which Dr. Shirres is now preparing on this subject.

Wesley Mills, M.D. I think we all agree that these are very interesting practical cases and they serve also the additional purpose of raising problems for discussion. There is nothing like always having something which calls for solution. The explanation that occurred to me first of all is the possible one, in regard to some of these cases, of primary degeneration. It has been found that section of the nerve not only leads to Wallerian degeneration but also to a primary degeneration which is marked especially in the cell bodies. Now, if these cell bodies actually die of course the whole neurone must perish. In my experiments I found, with others, that the character of the injury had a good deal to do with the degree of degeneration in the body of the cell; the amount of shock determined whether the cell actually died or not. Mere section did not lead to the actual death of many cells in certain individuals, but pulling out the nerve—evulsion—did cause widespread death of cells. Now, fracture is a violent thing, and if the nerve is injured this occurs in a very severe form; there seems to be a kind of shock. The question of ascending neuritis did not occur to me, but I should say that that was in these cases probable. Some years ago I had a fractured humerus myself and it caused a good deal of trouble for a long time. There was a certain amount of atrophy of muscles and a good deal of pain and tenderness, so that I am satisfied that there was neuritis in this case. According to the notions that are most prevalent in English-speaking countries at present the principal part in the regeneration of a nerve is taken by the central neurone. I must say that in some of these cases that have existed long without operation, and when after the best surgery there is no result, the facts seem to point to the importance of the peripheral part of the neurone in regeneration; and I am inclined to think that we have come to believe a little too strongly in the neurone doctrine which presents many difficulties in practice and people are a little too much inclined in England and on this side of the Atlantic also, to give insufficent weight to the influence of the external sheath in regeneration. And these practical cases that do not respond to surgery seem to me to rather emphasize the importance of this peripheral part, otherwise, why should there not be regeneration after any length of time; that is to say, if the whole thing was dependent upon the central portion that remains.

A. Lapthorn Smith, M.D. Dr. Shirres is to be congratulated upon his untiring energy and perseverance in these difficult cases. With his treatment he gets the muscles ready so that if the nerve ever came down there would be something to work upon. Sometimes his work would cover a whole year before he would be rewarded by success.

D. A. Shirres, M.D. I certainly agree with Dr. Russell that we get an ascending neuritis quite frequently; we have always three or four cases in the course of the year, but they are usually not traumatic, that is very common, but in the case like that of a splint I cannot think of any septic condition being present which would be a cause. It is an established fact that degeneration not only goes downwards but it may go upwards, as Professor Mills states. In the case of the man with the leg removed we found the cells in the anterior column of the spine degenerated. I am probably optimistic in regard to the value of electrical treatment by galvinism in peripheral diseases, and only recently a well known surgeon told a patient of mine that "it was no use," but that patient was soon able to prove to him that it had been of great value, and these cases I show to-night are a pretty positive demonstration of its value.

W. Grant Stewart, M.D. We are indebted to Dr. Shirres for bringing this very valuable series to show us to-night. I think we all learn a great deal from seeing the actual cases, and we have to thank Dr. Shirres for the trouble he has taken to show these interesting cases.

TWENTY-FIVE YEARS' ADVANCE IN ABDOMINAL SURGERY.

A. Lapthorn Smith, M.D., read the paper of the evening.

A. L. C. Gilday, M.D. There have been great advances in abdominal surgery, as everyone knows, even during the last ten years. One of the striking things is the large proportion of cases with small hæmorrhage. We used to see operations where two or three assistants were kept busy with sponges swabbing up the blood while the operator was looking for arteries which he had lost sight of, and which had been cut. Now the arteries are tied before they are cut and that is one of the advances. Another thing is the improvement in the operating room, the long sleeved gowns, rubber gloves, etc., which are all sterilized. But I still think that we are only at the beginning of our operative work, and the knowledge which we have attained will be materially added to in the next ten years.

Wesley Mills, M.D. I have listened to Dr. Smith in this Society for the past twenty-five years, and I do not know that during that time I have ever heard him give as condensed, as pregnant, or as wholly satisfactory an address as this. I have not always been able to agree with Dr. Smith, but to-night I am sure we are all pleased with the way he has presented this subject, so simply, without undue use of technical terms, and following general principles. I think, perhaps, Dr. Smith has a little over-stated some things. For instance, I would not like to be operated on out in the snow. I have always felt that one of my great-

est enemies in both normal and abnormal condition was cold, and I think it is very important to keep the patient warm. I dare say Dr. Smith does too, but it did not appear so from his remarks. As a patient I feel very keenly upon some points upon which Dr. Smith has touched, for example the question of drinking water. Dr. Smith will remember how patients used to be starved for water, but nobody knows what this experience is until he has gone through it. Again, there is the question of anæsthetics. I had an experience which really supports what Dr. Smith has said about the quantity of anæsthetic. This misfortune was not due to any defect on the part of the anæsthetist, who was a very admirable man. I had this anæsthetic in my ordinary ward room because it was thought that the operation would be a very trivial one though it really lasted nearly an hour. Now, all this time I had been breathing the anæsthetic, and as I was left in that same room which was not properly cleared of the anæsthetic I was receiving it all day long more or less and with disagreeable results. With regard to the nurse, Dr. Smith has hinted at the psychological principles which underlie experience—that one does not have to speak when a thing is wanted, that such wants are anticipated and that it is best to have the same person. But I do not think I would like, as a general rule, to have the ordinary person about one for such a long period, say, as Dr. Mayo had his nurse assistant. My experience has been that the older nurses are not the best, and I think the success of some of the younger nurses is due to their high ideals as evidenced by the thoroughness with which they act, the anxiety they displayed if everything does not go well and their close attention to the smallest details.

Grant Stewart, M.D. I think we have to thank Dr. Smith for this very excellent, concise and yet full account of the advances of surgery in the past 25 years. We cannot all go back 25 years, but some a good part of it, and we can quite corroborate what Dr. Smith has said. We all have seen Dr. Smith operate and we know what a dextrous operator he is, and he is thoroughly competent to speak on this subject. One point he mentioned, about waiting for symptoms, reminded me of a case of a young lady toboganning on Fletcher's Field between 5 and 6 o'clock a few weeks ago. She felt some pain over the epigastric region and came home. About 7 o'clock she had a most severe epigastric pain, and I saw her then; pulse 100; there was vomiting; no pain over the appendix or lower abdomen, but the whole abdomen felt like a board. I had one of the surgeons see her and he made an incision over the region of the stomach and examined it very carefully but could find no perforation. While he was doing this we noticed the appearance of

some dark material which appeared to be blood. (She was a young woman, aged 30, and had just menstruated the previous month.) On observing this it was thought that it came from lower down in the abdomen. A second incision was made over the hypogastric region and there was found a ruptured cyst over the region of the broad ligament in the left side and the bleeding point discovered. He removed the cyst and with a good deal of difficulty checked the bleeding. The patient made a good recovery, and has been well since. This case bears out very well Dr. Smith's remarks that we should not wait to make a diagnosis, but make an exploratory incision. In this case it saved the girl's life, as I hardly think any one could have made a diagnosis from her symptoms, of the condition which actually was found.

A. Lapthorn Smith, M.D. I wish to thank you for the kind remarks which have been made. I did not have time to say anything about shock, but I might say now that a great advance has been made during the last twenty-five years, so that it is rarely seen now after abdominal operations. Shock was often a misnomer as it was really made up of several different things. First, it was often due to hæmorrhage—the blood pouring out steadily during a long operation until there was no fluid left for the heart or lungs to work on. In other cases there may have been very little hæmorrhage but the vital depression was due to prolonged anæsthesia. Chloroform, or, indeed, any anæsthetic administered for several hours would give even a healthy man shock. Then there was the chilling of the patient with wet towels intended to be hot but which quickly became cold evaporating lotions. But perhaps the greatest advance in avoiding shock was that by means of the Trendelemberg posture; the majority of abdominal operations are now performed without handling the intestines, and, indeed, in many cases without seeing them. The handling and exposure of the intestines caused real shock, through the great sympathetic. Tweney-five years ago it was the rule; now it is quite the exception. The administration of strychnine for several days before the operation was another advance; it diminishes the calibre of the bowel and expels gas so that the intestines drop out of sight as soon as the peritoneum is opened.

I also did not have time to mention the great advance of the rectal enema of normal salt solution as a means of avoiding shock. When there is no pressure in the radial there is very little in the aorta, and as the heart only gets its nourishment through the coronary artery and as the coronary artery only receives blood when the pressure in the aorta is high, we are devoting a great deal of attention now to replacing the blood and heat lost by the operation by rectal enemas of hot normal salt solu-

tion allowed to flow very slowly into the bowel, sometimes all through the operation and nearly always for several hours afterwards, and with remarkable results not only in avoiding shock but in saving the patient from the intolerable aching and thirst from which they used to suffer. I am having an original research made of my last hundred laparotomies to show that there has been very little if any fall of temperature or rise of pulse after the operation.

PATHOLOGICAL SPECIMENS.

O. S. Waugh, M.D. I have here to-night a few specimens that we have had from autopsies of the last few weeks at the General Hospital. The first is a heart from a case of chronic myocarditis as a result of chronic arteriosclerosis of the coronary arteries. The calibre of the vessels is greatly diminished and at the site of their origin the vessels are almost occluded. In the left ventricle the wall is very thin in one place, there being almost an aneurysm of the heart, and at this site there is a rather large mural thrombus. The heart is very much enlarged.

The second specimen is from a case of streptococcic septicæmia. At autopsy there were found multiple mural thrombi of both ventricles. A few of the thrombi are visible here. There was also an acute malignant endocarditis.

The third is a child's heart showing also multiple mural thrombi with infarction in places. The thrombi are situated in both ventricles in this case; this case also showed infarction of the spleen and kidneys.

There are two lung specimens, one from a man who was struck by an engine. He was very much bruised; there was a compound fracture of the tibia; his scalp was very much torn right down to the calvarium, but showed no fracture of the skull. At autopsy, on examination of his right lung there was a rupture through which the finger could be inserted. At either side of this rupture the visceral pleura seemed to be intact, but you can see underneath the pleural surface the rupture of the lung substance extending for about ½ to 1 cm. but not extending through the pleura. On careful examination there was no sign of fracture of the rib and no sign of external thoracic injury. The rupture of the lung and the pleural cavity full of blood was all that were found.

The other case was that of a boy who had been caught in an elevator and crushed. The history is not very clear, but at autopsy he had bruises about the neck and back of shoulders. There was marked cervical emphysema of the right side of neck and face, and on opening the thoracic cavity the left chest was apparently normal. There was a fracture of the 1st, 2nd and 3rd ribs posteriorly, just outside their articular surface with

the vertebra. On the right side there was a chronic obliterative pleuritis, the viscereal and parietal pleuræ were very firmly adherent to one another. There was a fracture of the 2nd, 3rd and 4th ribs posteriorly, similar to that on the left side and also a rupture of the right bronchus. The explanation was offered at autopsy that this rupture of the bronchus was caused by the sudden continued pressure on the right side of the chest, the obliterative pleuritis causing that lung to move with the chest at at the same time putting severe tension on the bronchus, which ruptured.

D. F. Gurd, M.D. I would like to know the age of the patient from whom the first specimen was taken.

O. S. Waugh, M.D. The patient was aged about 58, and there was no brachycardia.

A. H. MacCordick, M.D. This case was a male, aged 58. He was admitted to the Montreal General Hospital in August, 1909, complaining of weakness and pains in his left arm and leg. He gave a history of venereal disease and had used alcohol to excess. There was no family history of nervous disease. On admission he had marked weakness of his left arm and leg. There was complete anesthesia of the whole left side with loss of taste and smell. The field of vision was markedly contratcted. The pulse was weak, regular and of high tension. The cardiac dullness was considerably increased and the aortic sound accentuated. He had well marked Dupuytren's contraction of the left hand. The urine was of low specific gravity, contained a considerable amount of albumen with granular and hyaline casts. He gradually improved and when discharged, five months later, could walk fairly well. He again lapsed into his intemperate habits and died suddenly one month later.

HOOK-WORM DISEASE.

R. E. Powell, M.D.

A report of this case appears in the present number of the Journal.

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EXPERIMENTAL INTRATHORACIC SURGERY.

(Preliminary Report)

BY

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Prior to the introduction of difference pressure methods by Sauerbruch, in 1904, the danger of lung collapse in the presence of open thoracotomy proved an effectual bar to the development of intrathoracic surgery. Although an artificial respiratory apparatus for the prevention of lung collapse had for many years been used in physiological experiments, the negative pressure chamber of Sauerbruch was the first apparatus constructed with the view of maintaining normal pressure differential in intrathoracic work upon the human. With the introduction of the now famous Breslau cabinet a certain means was established of preventing pneumothorax. In his publication of 1904, Sauerbruch described in detail his negative differential chamber and recounted his results in a series of animal experiments, pointing out at the same time the possibility of preventing lung collapse by reversing the mechanism of the chamber, that is, by the employment of positive differential pressure. At that time, however, in the light of his experimental experience, Sauerbruch expressed strongly his opinion that the negative differential was the method of choice, believing that it more closely approximated the physiological equivalent. He enumerated the following objections to the use of positive pressure:—

(1) The change in the respiratory rhythm.

(2) The danger of producing interstitial emphysema.

(3) The effects upon the circulation:

(*a*) Pressure upon the lung capillaries through increased intra-alveolar tension with resulting embarrassment of the right heart.

(*b*) Direct atmospheric pressure upon the great veins leading to a diminution in the diastolic suction, a slowing of the venous current, and a measurable increase in the intravenous pressure.

(4) The difficulty of narcosis.

(5) The loss of heat.

(6) The danger of pleural infection owing to the large exchange of air.

(7) The persistence of a tension pneumothorax.

Unconvinced by Sauerbruch's contentions with regard to the effects of positive pressure, and impressed with the limitations of the negative chamber owing to its cost, lack of portability, etc., Brauer, with Petersen, experimented at Heidelberg with a positive pressure apparatus, and was able to disprove Sauerbruch's main contention with regard to the circulatory disturbances said to be associated with the use of this method.

Although many modifications in the construction of apparatus, negative and positive, have been described, both principles remain,—the latest development tending toward a combination of the two. Even at this short distance of time it is interesting to note that the primary objections to the use of positive pressure, urged especially by Sauerbruch, have largely disappeared owing to the extensive experimental work which has been done both in Europe and on this continent with the use of the positive pressure mask.

Seidel, in an exhaustive study upon animals, has furnished decided proof of the physiological equality of the two methods. He concludes:

(1) "That it is impossible to speak of injurious effects following the plus pressure method in open pneumothorax, as it stands only a trifle behind, if at all, the minus pressure method in physiological exactness.

(2) That plus pressure consists in the respiration of compressed air with a pressure simply sufficient to prevent lung collapse. It is not true that the air is blown into the lungs, except during the first one or two respirations, after which the respiratory act takes place normally.

(3) That the relative pressure on the veins of the thorax and trunk is equal in both methods.

(4) That with plus pressure there is a slightly increased pressure in the body veins, but it is not due to pressure on the alveolar capillaries. It appears to result rather from the effect of the pressure on the whole contents of the thorax, and expresses itself in a diminished capacity of the circulation and not in any stasis between the two sides of the heart." (Quoted from Flint.)

When the discussion on the comparative physiological merits of the

two methods was at its height, it was pointed out by Wendel that the difference in the atmospheric pressure between Breslau and Marburg exactly corresponded to the normal difference between intrathoracic and intrapulmonic pressure, which in man, according to Friedrich, is 7 mm. of mercury. Thus, if Sauerbruch and Brauer were operating simultaneously under normal barometric conditions and with the use of the two methods, the pressure effects would be precisely the same. The Breslau cabinet would register the Marburg atmospheric pressure while the patient's head was under Breslau atmospheric pressure, and Brauer in operating would raise the mask pressure to the reading of the Breslau barometer and open the thorax under Marburg pressure.

A still simpler illustration might be cited in the effect of our own mountain elevator, where in a descent of approximately 250 feet, a pressure difference of 7 mm. of mercury is borne without noticeable respiratory or circulatory disturbance.

Thus, we may accept as proved that the opening of the chest in a rarified atmosphere, or the maintenance of lung inflation through the use of a pressure mask, have within normal pressure limits identically the same effect upon the circulatory apparatus and pulmonary viscera.

Before the advent of these modern methods of preventing lung collapse, pneumothorax could be prevented or avoided either by (*a*) existing inflammatory adhesions between the parietal and visceral pleural layers; (*b*) the artificial induction of adhesions through intrapleural instillations of chemical irritants; (*c*) the suture of the pleural layers about the field of operation; or by (*d*) plugging the thoracic opening by the withdrawal of a portion of the lung. The limitations of intrathoracic work with the aid of such protection are self-evident. Under such conditions extensive exploration of the pleural cavity is out of the question, and the risk of final collapse or grave respiratory or cardiac embarrassment through traction upon the lung is not thereby obviated.

In addition to the work of Sauerbruch, Brauer, Petersen and Friedrich, a mass of instructive experimental intrathoracic surgery has been carried out on this continent by Robinson, Green, W. Meyer, Janeway, Flint and others.

Although pneumonectomy was the operation first practised in connexion with the experimental use of Sauerbruch's negative pressure chamber, the results have, until quite recently, been unsatisfactory owing to the following causes:

(1) Primary infection of the pleura through the operation wound or divided bronchus.

(2) Pneumothorax and secondary infection owing to faulty closure of the bronchus.

(3) Tension pneumothorax and transudate following the use of positive pressure.

As exemplifying these conditions the results of Sauerbruch and Robinson, and Haecker, in 38 experiments with positive pressure, in which extirpation of the left lung was carried out after simple ligation of the bronchi and vessels en masse, are most striking. Seven deaths were the result of primary infection; nine died from failure of the bronchial closure; and eighteen from tension pneumothorax leading to the formation of transudate. Thus, only four animals recovered. Out of a total of 92 pneumonectomies in dogs under positive pressure, 79 have proved fatal, or 86 per cent.

Opposed to these results are those recounted by Friedrich, Sauerbruch, Meyer and others, who successfully performed numerous complete pneumonectomies with the aid of negative pressure.

Various methods were developed in the attempt to close permanently the divided bronchi, including simple ligation and cauterization of the stump, curetting of the bronchial mucous membrane before ligation, re-inforcement of the stump with lung tissue, etc. To Meyer, however, is due the credit of having devised the method illustrated in the following sketch. In Meyer's hands this method of bronchial closure, combined with the use of negative pressure, has yielded the most successful experimental series,—16 out of 17 dogs having recovered. (Fig. 1).

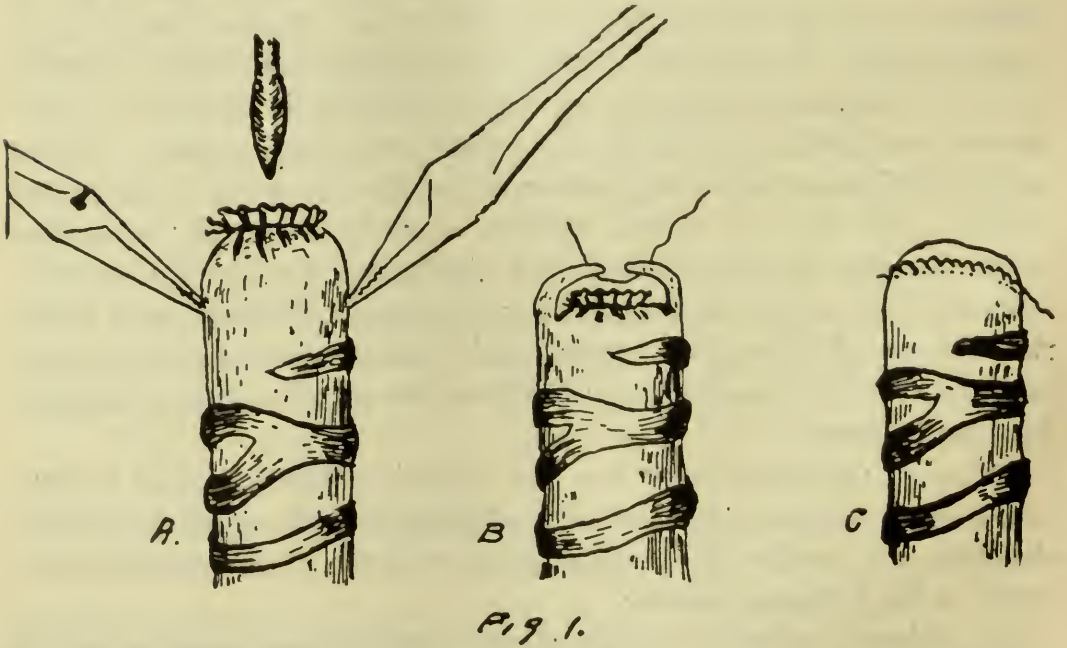

Fig. 1.—Diagrammatic representation of method of bronchial closure. (a) Ligation of bronchus after crushing. (b) Depression of stump within lumen of bronchus, with continuous suture of edges of crater. (c) External aspect of bronchial stump.

In order to gain an entrance into the subject, and with the object of determining the relative parts played in the obliteration of an eviscerated pleural cavity by the various anatomical elements forming its boundaries, we undertook a series of experiments, the results of which we would beg leave to lay before you.

Proceeding upon the known fact that unilateral thoracotomy might be undertaken in rabbits without great risk of sacrificing the animals, and pending the construction of a positive pressure apparatus, we carried out a series of 31 experiments.

A strictly aseptic technique was, of course, constantly aimed at, and under ether anæsthesia total pneumonectomy, either right or left, was performed in each case. After preparation of the skin, the operation consisted in the employment of a straight incision in the long axis of the rib, the separation of the muscular layers in the direction of their fibres, resection of the middle two-thirds of the fifth or sixth rib overlying the root of the lung, and the successive ligation and excision of the lung lobes in situ. Closure was effected by suture of the intercostal muscular stumps and continuous suture of the muscular layers. Finally, before closure of the skin with Michel's clamps, aspiration of the eviscerated cavity was carried out in a majority of the cases, as we were early impressed with the necessity of dealing in some way with the closed pneumothorax.

The following figures give briefly and from various points of view the results of our experiments: 31 experiments; 19 recoveries and 12 deaths; recovery percentage 61.2. Of the deaths one occurred before operation from anæsthesia; four were due to hæmorrhage, two to infection, and five to the direct or indirect effects of tension pneumothorax, that is, either to respiratory or cardiac embarrassment. Of the four deaths from hæmorrhage, two occurred in the first stage of the operation from laceration of the lung tissue, which in the rabbit is extremely friable and can be handled only with padded forceps. Indeed, the liability of tearing is so great that it is necessary to ligate the lobes in situ without attempting to deliver the lung. The remaining two deaths were the result of hæmorrhage after closure,—in one instance, from the torn mediastinal attachment of the lower lobe, and in the other, from the divided intercostal artery in the posterior angle of the thoracotomy wound. Of the two cases of infection, the first occurred in a rabbit with severe snuffles; fibrino-purulent exudate was found in both pleuræ and in the pericardium, death occurring five days after operation. Multiple necroses of the liver were also present. The second case occurred in a poorly nourished rabbit three days after operation, the post mortem revealing a bilateral serous pleuritic effusion and

serous pericarditis, marked chronic interstitial nephritis, and in the abdomen a large agglomeration made up of coils of small bowel and caseous material.

With regard to the effects of aspiration, it should be noted that of the five deaths from pneumothorax none had been aspirated. Of the nineteen animals which recovered, twelve were aspirated and seven not. While these figures do not by any means yield conclusive evidence of the favourable effects of aspiration, it is undoubtedly the case that the animals aspirated recovered much more rapidly than those left with a closed pneumothorax. While unaspirated animals, as a rule, made no attempt to stir until some hours after operation, the aspirated animals were generally able to stand within fifteen minutes after the completion of the operation, and in a number of cases were noted to eat ravenously within an hour, no doubt the chief incentive being the thirst induced by the anæsthetic.

These figures compare favourably with those of Robinson, who operated under similar conditions without the aid of differential pressure. Of seventeen rabbits operated upon by Robinson, ten recovered, or 58 per cent.

Again, if we divide our series into two groups, we find that in the first sixteen experiments there were eight deaths,—a recovery of 50 per cent.; and in the last fifteen experiments, four deaths,—a recovery of 74 per cent. This improvement in the percentage of recoveries may be attributed to the following: (*a*) Improvement in the general technique, no deaths having occurred from hæmorrhage due to laceration of the lung; (*b*) Reduction in the duration of the operation and the anæsthetic, from one hour (Case I.) to an average time of fifteen minutes, —the shortest time having been nine and a half minutes; (*c*) The more frequent employment of aspiration.

We must, however, ascribe a certain percentage of the later recoveries to the fact that the left thorax was eviscerated in nine of the cases, —a two-lobe operation taking less time and being attended with less hazard than a three-lobe pneumonectomy.

Of these favourable influences we would lay special stress upon the employment of aspiration as a means of overcoming the danger of tension pneumothorax.

Finally, in extenuation of the death rate in the first sixteen operations, it should be stated that the figures include all animals used, whereas previous reports have allowed for the fatalities in the establishment of the technique.

From our later experience in performing pneumonectomies upon dogs, we are inclined to think that the danger of the formation of a trans-

udate in the presence of a closed pneumothorax is less in the rabbit than in the dog. Why this should be may possibly be explained by the fact that the normal differential in the rabbit is little more than one-half that in the dog. On the other hand, the mediastinum of the rabbit, in the presence of open thoracotomy and unsupported by differential pressure, oscillates with respiratory movements to a very much less extent than that of the dog, although it apparently yields itself most readily to the obliteration of the eviscerated cavity after operation. In this connexion, a further consideration is the fact that fatalities from tension pneumothorax occurred in our series of rabbits generally within a few hours after operation, whereas in the dog deaths from tension pneumothorax, associated with transudation, occur usually between the third and fifth days. (Robinson).

At the beginning of the year, Dr. Samuel Robinson, of Boston, was good enough to have constructed for one of us a revised model of his positive pressure apparatus. This portable apparatus consists, as you will see, of a pressure air pump run by a $\frac{1}{6}$ h.p. motor (Fig. II) and

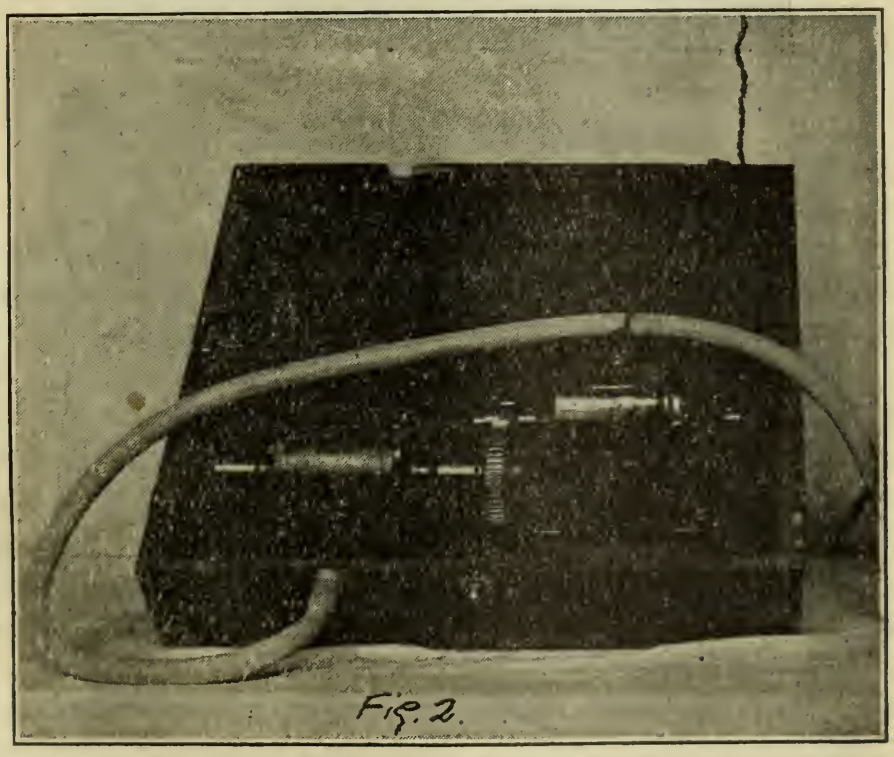

FIG. 2.—Pressure Air Pump and Motor, with tubing leading to control apparatus.

an arrangement of conduits for conveying the air supply to an air-tight muzzle or face mask, combined with an ether segment for the automatic

administration of the anæsthetic (Fig. III). The air outlet is controlled

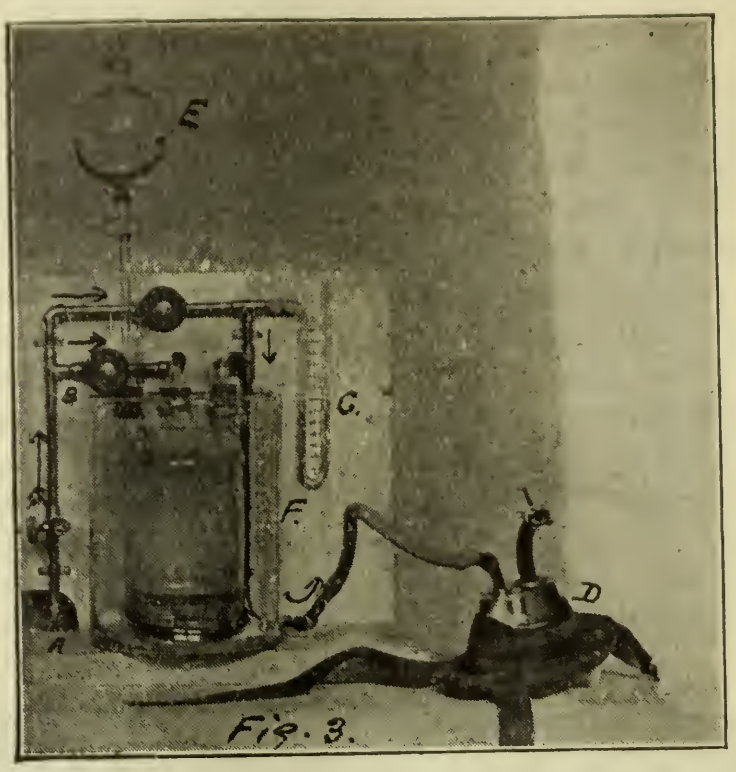

Fig. 3.—Apparatus for controlling air pressure and anæsthesia. (a) Connection with fan. (b) Valve to ether segment. (c) Manometer. (d) Face mask. (e) Ether lock for replenishing ether supply without stopping fan. (f) Water jacket and thermometer.

by a set-screw, the original resistance water bottle having been discarded as unsatisfactory. The air pressure within the mask is registered by a mercurial manometer. By a simple arrangement of valves the degree of anæsthesia may be regulated to a nicety, and in experimental work at least no assistant is necessary for the administration of the anæsthetic. The original etherizing segment has been advantageously modified by adding a water jacket to the Wolff bottle containing the ether. By this means too great a reduction in the temperature of the ether from rapid evaporation is avoided. This not only ensures a more even narcosis, but also prevents too great a depression of the body temperature.

This form of apparatus meets three important requirements: cheapness, simplicity, and portability; and for experimental purposes, at least, is entirely efficient. The pump is capable of supplying approximately 400 cubic feet of air an hour. The primary requisite in any apparatus of this kind is the capability of the pump to supply a large amount of air to the mask so that the escape may be free. This provides for the necessary air exchange. The construction of a mask for the

human (Fig. IV) which would resist leakage and at the same time not

FIG. 4.—Mask for the human. (a) Air inlet. (b) Outlet controlled by set-screw.

press unduly upon any part of the face, entailed numerous failures before the present product was evolved.

With the use of this apparatus, either with or without the ether segment, we have carried out a number of thoracotomies upon dogs, the results of which we hope to report fully in a later paper.

Our object in undertaking a series of pneumonectomies in dogs with the aid of positive differential, in the face of the unfavourable results previously recorded, was threefold: (1) To acquire a knowledge of the proper application, limitations and effects of the plus differential; (2) to devise, if possible, some simple and effective means of overcoming tension pneumothorax; and (3) to acquire a suitable technique for bronchial closure.

As already stated, the apparatus devised by Robinson has in this later series of experiments proved entirely efficient as a means of preventing lung collapse in the presence of wide thoracotomy. With the use of positive pressure, providing the animal be completely narcotized, the normal cardiac and respiratory rhythm may be observed to proceed without disturbance for an indefinite period, and under these conditions owing to the slight movement at the root of the lungs, ligation of the bronchial vessels and the finer manipulations, such as depression and inclusion of the stump by suture, may be carried out with absolute ease. It is only when the animal is lightly narcotized that violent respiratory disturbances follow the opening of the thorax. Under such a condition of incomplete narcosis, the disturbance observed takes the form of exaggerated expiratory movements, at which time, owing to

the heightened intrapulmonic pressure, the normal differential may fall to 4 mm. of mercury or less without lung collapse, in spite of the fact that the presence of a wide breach in the thoracic wall deprives the pulmonary viscera of its normal expiratory fulcrum. It is at such a stage of the anæsthetic, also, that one meets with the violent oscillations of the mediastinum noted by many experimenters. With deepened anæsthesia these exaggerated expiratory efforts subside and normal movements are restored, such movements being, however, undoubtedly reduced in amplitude in the presence of positive pressure. In the event of the occurrence of cardiac disturbance, either from the effects of the ether or following partial collapse of the exposed lung, rhythmical inflation promptly restores the circulatory balance. As a matter of fact in our later experiments, especially since the addition of a water-jacket to the ether bottle whereby vapourization of the anæsthetic is rendered more uniform, no symptoms have arisen during the performance of complete pneumonectomies referable either to the circulatory or respiratory organs which called for interruption or attention of any kind.

With regard to the limitations of the positive differential, it would appear that a case had been made out against its use where, subsequent to operation such as pneumonectomy, one has to deal with a large cavity exposed to atmospheric pressure. The experiences in this connexion, referred to in the earlier part of this paper, would seem to establish negative differential as the method of choice. Before the appearance of Sauerbruch and Robinson's paper, in which this subject is fully dealt with, we had employed aspiration in our work upon rabbits as a means of overcoming the generally fatal effects of a total closed pneumothorax, and from the results recently published by Flint, of New Haven, we are encouraged to believe that a similar procedure is capable of averting fatalities in pneumonectomized dogs. By means of a simple device, such as that shown in the photograph submitted, (Fig. V), we hope in the future to obtain results parallel to those reported by Meyer. In illustration of this latter contrivance I might briefly summarize the following experiment:

No. 39. March 25, 1910—Fox terrior dog. Left thoracotomy through the fifth interspace. Rib spreader used. Successful excision of lower and upper lobes by Meyer's method. Closure with pericostal stitch with aspirating cannula in the posterior angle of the wound. Before tying the last suture, the cavity was aspirated until a negative tension of 10 mm. of mercury was registered by the manometer on the aspirating apparatus. The cannula was then withdrawn and the last suture tied.

At the close of the operation the respirations were between 30 and 40. The animal made a rapid recovery. Three days later the dog was running about, taking food well, and was apparently convalescent. On April 5, ten days after operation, after jumping on and off a table and chair, the dog was suddenly seized with twitching movements involving the jaws and muscles of both right extremities. The dog was found dead the following morning.

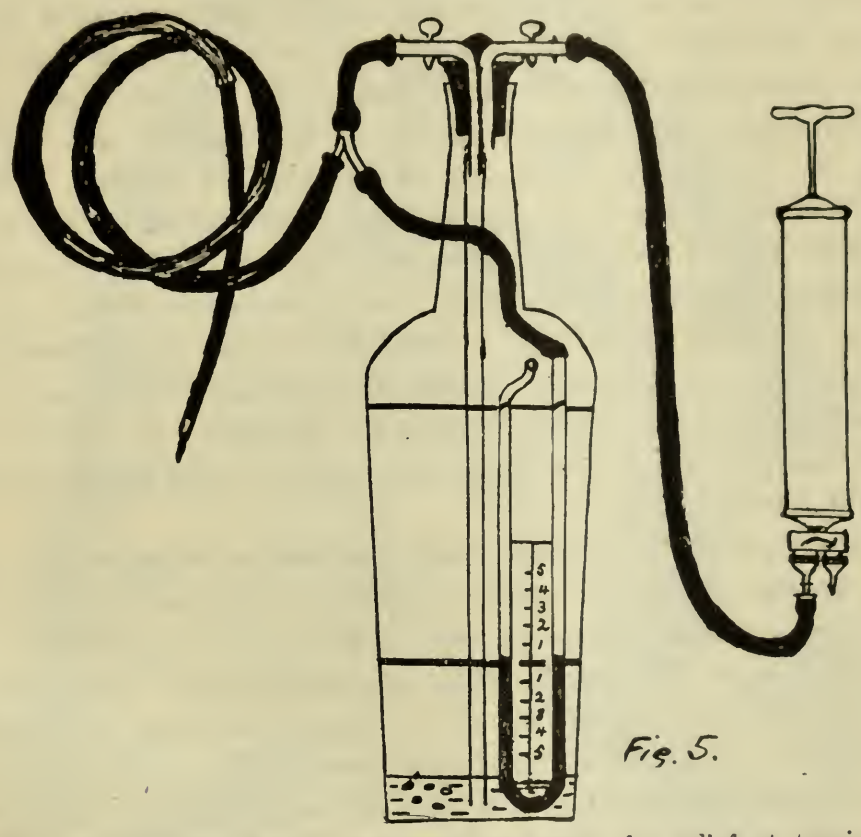

FIG. 5.—Aspirator with manometer attachment for relief of tension pneumothorax.

Post Mortem.—Left thorax—Suture line perfect. Small cavity corresponding to wedge of lower lobe, lined with normal glistening membrane. At line of rib closure firm adhesions between the chest wall and pericardium anteriorly and the mediastinum posteriorly. Above this bar a slit-like cavity underlying the costal cartilages from the second to the ninth, and the second, third and fourth ribs, was found. The lining membrane of this cavity was covered with a plastic blood-stained exudate. There was no recent hæmorrhage and no evidence of infection. Death was thought to be due to cerebral embolism. Apart from an intestinal flux, the condition of the animal had remained absolutely satisfactory from the time of the operation until the sudden exit.

The trachea in this case was connected with the air pump and a pressure of 30 mm. of mercury applied, overdistending the right lung, but without leakage occurring from the bronchial stumps.

While it is true that almost complete obliteration of an eviscerated pleural cavity may be obtained by closure under exaggerated pressure (18 to 20 mm. of mercury), such a procedure not only imposes a serious strain upon the bronchial stump and the mediastinum, but may precipitate critical symptoms both respiratory and circulatory, owing to the disturbance of the normal respiratory rhythm and the sudden displacement of the heart. Further experimentation may prove that within certain limits hyper-pressure may be safely used in this connexion, but it would appear that uniform results can be obtained only where, in closing an eviscerated cavity, one leaves behind a pressure difference approximating as closely as possible the physiological. This negative differential should necessarily be without violent effect upon either the mediastinum, heart or great vessels; that is, a minus pressure of from seven to ten mm. of mercury. Under such conditions obliteration of the cavity takes place chiefly through the gradual displacement of the mediastinum and its contents toward the operated side, and to a less extent through a rise in the diaphragm, and in young animals the falling in of the thoracic wall.

On the other hand, a total closed pneumothorax invariably proves fatal. In the presence of such the mediastinum oscillates with each inspiration towards the sound side. Owing to the absence of lung tissue absorption of the enclosed air is practically nil. Eventually the accumulation in this cavity of clear, limpid transudate which rapidly increases in volume, adding more and more to the embarrassment of the heart and sound lung, proves fatal through its mechanical pressure effects. A study of the effects of closed pneumothorax upon the mediastinum has, in a measure, accounted for the unsatisfactory results of extensive thoraco-plastic operations undertaken for the obliteration of large pleural cavities. In such cases the integuments coming to rest upon the mediastinum, and unsupported by the bony thorax, leave the former without protection against the effects of atmospheric pressure during inspiration. In consequence, the ribless chest wall moves with the mediastinum towards the sound lung, and in so doing largely negatives the effects of the inspiratory act upon the sound organs, preventing lung expansion and leading eventually to death.

Very great progress has been made in the technique of bronchial closure, and from our limited experience we are led to conclude that the method of Meyer is the best method so far devised. This method

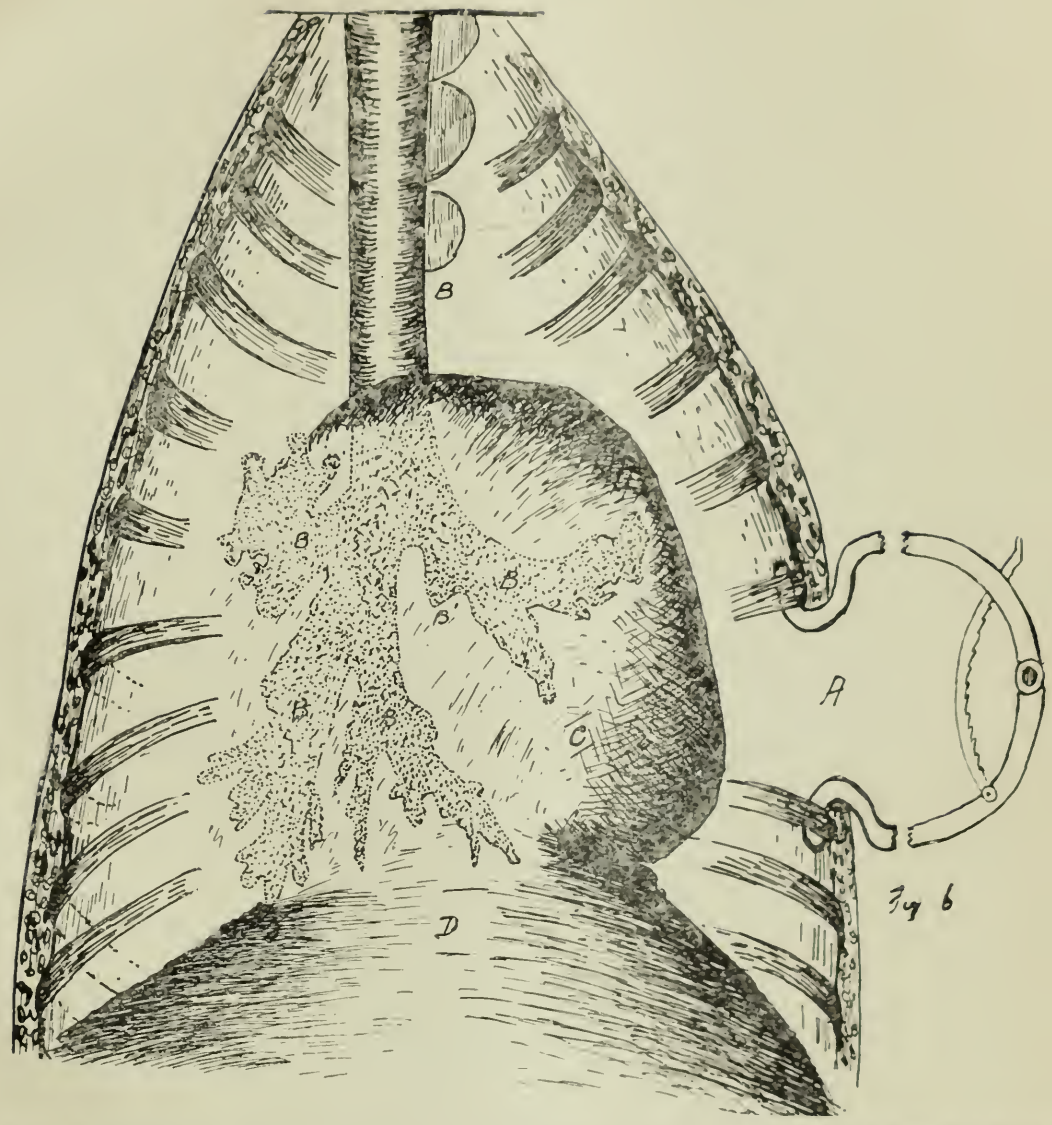

Fig. 6.—Drawing from skiagram of thorax and thoracic viscera of a dog, showing (a) Approach to mediastinum through linear incision and use of rib spreader instead of rib resection. (b) Trachea and bronchial tree injected with alloy, showing remarkable "tidal" capacity of the primary air passages in the dog; at B^1 is stump of bronchus to lower lobe, which has been excised. (c) Pericardium. (d) Dome of diaphragm.

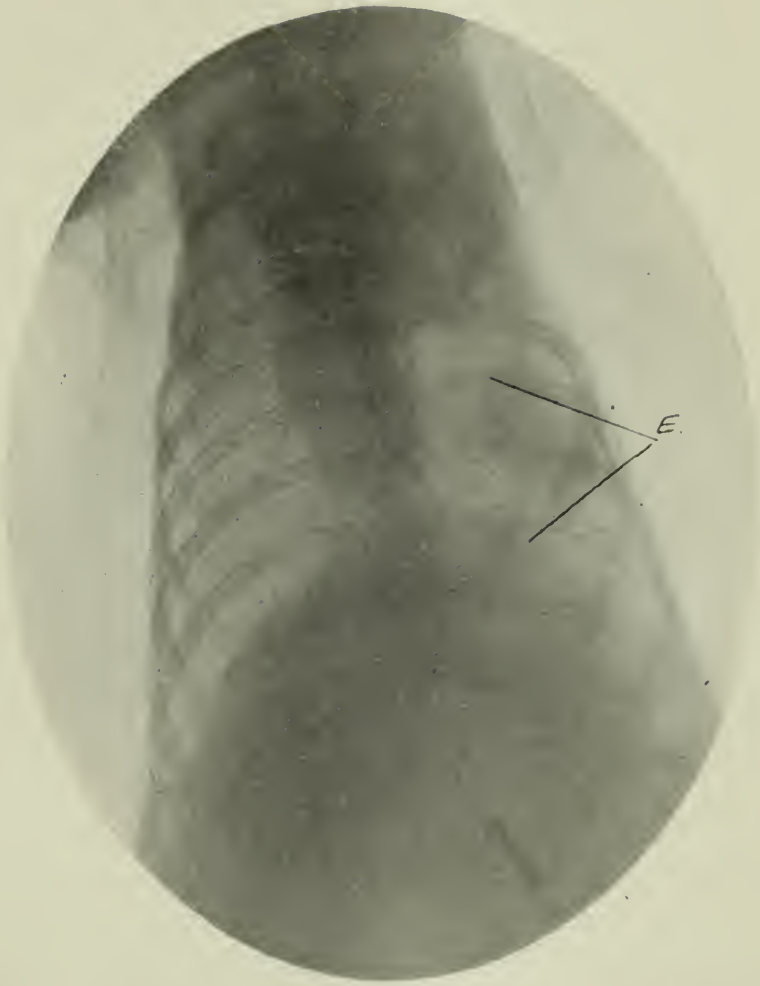

Fig. 7.—No. 13, rabbit. Operated upon Nov. 19, right pneumonectomy; aspirated. Killed January 6. Skiagram shows rib defect, 5th right. Heart shadow in upper right thorax. Remaining thoracic areas completely occupied with lung tissue with exception of small organised exudate at E. Frozen sections confirm skiagram.

Fig. 8.—No. 14, rabbit. Operated upon November 26, right pneumonectomy; not aspirated. Killed January 7. Trachea filled with Onion's alloy.* Skiagram shows rib defect at 5th right. Truncate right bronchi. Organised exudate in lower right thorax. Deflection of left bronchial tree to same side. Heart shadow in normal position.

*Onion's alloy: Bismuth, 5 parts; lead, 3 parts; tin, 2 parts, melted and cooled to 212°F. and 1 part mercury added. This amalgam melts at 170°F. and sets between 140° and 150°F.

consists, after ligation of the vessels, in the clearing of the bronchus for a space of 2 cm., the application of an intestinal clamp proximally, crushing of the tube, its ligation with chromacized gut or silk, and amputation of the lung; finally, the depression of the stump and its inclusion within the lumen of the bronchus by a continuous suture, (Fig. I).

Tiegel has pointed out the danger of a high closure of the bronchus owing to reflex stimulation of branches of the pneumogastric in the neighbourhood of the lung root. We have carried out successfully two experiments in which, after dissection and retraction of the left vagus, amputation of the whole lung was effected through the primary bronchial division. This procedure, of course, entails a certain amount of traction upon the mediastinum and opposite bronchus; so much, indeed, that after closure the stump retracts out of sight beneath the pericardium. No reflex disturbances were encountered in these two experiments, and although the animals eventually succumbed some days after operation (ten and four days respectively) from infection of the pleura, the bronchial closures effectually withstood pressures of 20 to 30 mm. of mercury without evidence of leakage.

In our further work we hope to investigate the question of loss of heat. Temperature observations after operation have invariably been subnormal. To what extent this loss of heat may be attributed to the large exchange of air in the pleural cavity during operation, is still a matter for investigation. Quite possibly the fault will be found to lie with the method of administering the anæsthetic.

We hope, upon a future occasion, to have an opportunity of presenting experimental results dealing not only with the question of the obliteration of cavities after the removal of lung tissue, but also the interesting questions of lung exploration, lung suture, the establishment of an anastomosis between the œsophagus and abdominal viscera, and the extirpation of the thymus gland.

Before closing we should like to express our thanks to Dr. Archibald for his frequent assistance at experiments; to Dr. Wolbach for his interest in connexion with the post mortem work and the preparation of specimens; to Dr. Wilkins for the excellent X-ray plates from which the prints here reproduced have been made; and to Dr. Tees for photographs of apparatus.

A NEW FORCEPS FOR THE REMOVAL OF THE ANTERIOR LENS CAPSULE.

BY

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Demonstrator in Opthalmology, McGill University, Montreal.

The operation for the removal of senile cataract affords more opportunities for the exercise of individuality or of special technique than perhaps any other in ophthalmic surgery. The point of incision, the size of the corneal wound, the presence or absence of a conjunctival flap, and the advisability of performing an iridectomy are a few features the significance of which receive various interpretations by different authorities.

To limit my remarks to the treatment of the anterior lens capsule, three principal methods may be said to be employed; these, however, will receive some slight change or modification by numerous operators as, in the opinion of each, more desirable results are obtained. These methods are:

1. Puncturing the anterior capsule with a cystotome with the subsequent enucleation of the lens cortex through the aperture thus formed. This method is frequently combined with the employment of various types of syringes to irrigate the anterior chamber.

2. Enucleating the lens in its capsule without puncturing the membrane, a method largely practised by members of the Indian Medical Service.

3. Extraction of the lens cortex from its enveloping capsule after a segment of the membrane has been removed by capsule forceps, a procedure the importance of which I had the privilege of bringing before your attention at the meeting of this section last year at Ottawa.*

A combination of the first and last mentioned methods, in the form of a peripheral capsulotomy with the cystotome, and the withdrawal or removal of the segment of capsule with forceps, may be attended with good results.

It is not my intention to criticize these methods, but to confine myself to the description of an instrument which I have designed for

Read before the Section of Ophthalmology, Canadian Medical Association, Winnepeg, 1909.

*"Ophthalmology," October, 1909, p. 20.

the removal of the anterior lens capsule to which I made a partial reference in my contribution of last year, when advocating the employment of capsule forceps in the extraction of the senile form of cataract. These forceps were made for me by Messrs. Hardy and Company, Chicago, from measurements and sketches, and to them my thanks are due for the care in which they carried out my directions in detail.

The instrument may be described as "L" shaped, the handle or part corresponding to the vertical portion of the letter being about 8 cms. long. To each arm of the handle is welded a curved extension blade of 8 mms. at an angle of 120°. At a point in the centre of one handle is a buffer pin which fits into a small aperture in the arm of the handle directly opposite. A shoulder on this pin prevents too strong a pressure upon the delicate extension blades, exact apposition being assured at the same time.

The extension blades, or the part of the instrument used within the anterior chamber, are curved concavely below, the degree of concavity having been obtained from measurements taken of the human lens. This curvature permits a uniform pressure over the whole of the lens surface, and consequently upon the suspensory ligament, a feature less likely to produce dislocation than when the whole force of a puncture from a cystotome is exerted at one point.

At the toe and heel of these blades two sets of tiny interlocking teeth have been set directed down and in, which allow the operator to obtain a secure hold of the underlying capsule. A careful measurement of the pupillary areas from microscopic sections of 53 eyes which I have prepared and mounted shows that the approximate diameter of the average pupil is 6.66 mms. By deducting 1.66 mms. from this for the space occupied by the teeth before and behind, one has an intervening space of 5 mms. for the size of the average segment of capsule, the removal of which will assure a clear pupillary area.

One particular case in point supports the use of the forceps. I performed a senile extraction in a woman whose vision had always been poor, but which had recently been reduced to hand movements. No details of the fundus could be determined, but projection of light and tension were normal. I removed a large piece of capsule at the time of the operation and floated it off into distilled water for purposes of demonstration. After the lens was extracted no irrigation was necessary and the wound healed without complication in the usual time. Six weeks later, when doing a post-operative retinoscopy, I was surprised to find that I had operated on a myope of —8.00D. Although normal vision was not restored, the impairment being due to choroidal

changes attending her myopea, she was still able to do as well as she had been able to do for some years before symptoms of cataract first made their appearance, and she could make her way about the city and do ordinary reading without assistance. The fact that one could obtain such improvement in vision in a case where one would be naturally anxious regarding the escape of a somewhat fluid vitreous was a matter of no little satisfaction.

I would not presume to deny that there are instances where the treatment of the lens capsule may be followed to better advantage than by the use of such capsule forceps; two conditions, at least, demand a more conservative procedure. In using capsule forceps one is more or less dependent upon a reasonable degree of control and of good behaviour on the part of the patient. Uncontrolled movement of the eyeball with forceps of any design within the anterior chamber may lead to a dislocation of the lens and to an escape of vitreous, with other disastrous complications, before the instrument can be withdrawn. Again, in cases of hypermature cataract where a more or less fluid lens cortex is associated with a degenerate or friable zonnular ligament, a more cautions treatment of the lens capsule by a single gentle incision with the cystotome, anticipating a subsequent discission, may avoid a rupture of the ligament and a dislocation of the lens into the vitreous cavity. These are conditions which are only fair to mention before passing judgment upon the instrument. Exceptional cases in ophthalmological, as in other branches of surgery, demand special treatment and technique if the best results are to be obtained. Capsule forceps are not designed for the exceptional cases, but for the majority of senile cataracts which are primarily uncomplicated, and where the surgeon has a reasonable degree of confidence in the control and good behaviour of his patient.

This particular pattern of forceps must not yet be accepted or judged on account of its present favourable record; the instrument is so far on trial. A longer and more varied experience, however, in the course of time may place it as one of some humble importance in our ophthalmological armamentarium. To Dr. Casey Wood, of Chicago, as well as to my colleagues, Drs. Stirling and Byers, my sincere thanks are due for many opportunities of introducing my forceps into their routine operative work.

LIVING CASE—A NEW OPERATION FOR THE TREATMENT OF ANTERIOR METATARSALGIA INCLUDING MORTON'S DISEASE.

By A. Mackenzie Forbes, M.D., Montreal.

The patient, which I now present, reported at my clinic at the Montreal General Hospital a year ago. He was suffering from anterior metatarsalgia. For ten months I tried all forms of non-operative treatment known to me in the hope that I would be able to relieve his symptoms. During this period many of you saw him, and on many occasions I have demonstrated the existence of two cardinal symptoms of this affection in this patient, viz., pain on lateral pressure on the metatarso-phalangeal joints and again, tenderness under the heads of the metatarsal bones.

Over two months ago I decided that nothing short of operative procedures would give him relief, and as I have considered the operation devised by Morton to be mutilating and as not being based on my conception of the pathology of this affection, I performed a new and original operation which I had planned a year previously and demonstrated to both members of this Society and to those of the Boston Orthopædic Club. This operation is planned on the supposition that the secondary symptom of this affection, viz., spasm of the extensor, causing hyper-extension of the affected toe acts to depress the head of the metatarsal bone and thus increases the pain and pain-giving deformity. The procedure, then, is to detach this tendon from the hyper-extended toe and to transplant it to the head of the metatarsal bone in the expectation of being able to convert what was a power for evil into a power for good.

This operation was performed on the patient before you two months ago, and I now present the patient to you in order to demonstrate that he is free now from both pain on lateral pressure on the anterior arch and tenderness under the head of the affected metatarsal,—that he is, in fact, cured.

A CASE OF AMŒBIC DYSENTERY WITH ABSCESS OF THE LIVER, ORIGINATING IN MONTREAL.

BY

F. G. Finley, M.D., and S. B. Wolbach, M.D., Montreal.

Sporadic cases of amœbic dysentery are occasionally observed in northern latitudes. Patterson (*American Journal Medical Science*, August, 1909) has recently reviewed the distribution of the disease in

North America. Amongst the cases referred to, one originated in Winnipeg, and is reported by Ball, of New York. Quite a number of instances have been reported in New York and Philadelphia, whilst isolated cases have occurred in Michigan, Maine, New Hampshire, and Minnesota. In many of these cases the individuals affected had never been in the South, or indeed far from the locality from which the cases were reported. Dock's case in Michigan had not been out of that locality for years.

The chief clinical interest in the following case lies in its having originated in Montreal. With the exception of the Winnipeg case, it is the first endemic case reported as having its origin in Canada.

E. T., a French Canadian, male, was admitted to the Montreal General Hospital on December 28, 1909, for pain and swelling in the abdomen. The illness began two months ago with abdominal pain of a colicky character; there were three or four loose movements daily with blood in the stools. Two weeks ago the abdomen began to enlarge. He had two or three chills and had lost 15 lbs. in weight. He was born and had always lived in this city, his wife stating that he has never been further away than Ottawa.

Examination reveals a sickly looking man, with pale face, and hollow cheeks and temples. The palate and conjunctivæ are somewhat anæmic, the blood count showing 4,750,00 red corpuscles, and 19,400 white corpuscles which were chiefly polymorphonuclears, hæmaglobin 95 per cent. (Sahli).

The temperature rose to 102 on the day of admission (being normal subsequently). The skin is dry and soft, the subcutaneous fat scanty and the muscles small. The pulse 114, easily compressed, of good volume and beating in pairs. The heart is normal. There is dulness at the right base of the lung from the angle of the scapula down, with absence of breath sounds and of resonance and fremitus. A Grocco sign is present at the left base. The tongue is slightly coated. The abdomen is moderately distended with dilated veins especially above. There is a dome-like elevation in the epigastrium more on the right than the left side. The liver is much enlarged forming a large solid mass below the ribs, reaching 10 cm. below the costal border in the nipple line, and masuring 23 cm. from the upper to the lower limit of dulness. The edge cannot be felt owing to the resistance of the abdominal wall. The surface is somewhat tender.

December 30.—Œdema is present over the whole abdomen, down to Poupart's ligament, and more on the left than the right side. The veins on the right lateral region of the abdomen have become enlarged.

The rapid enlargement of the liver with chills and fever, together

with emaciation and œdema of the abdominal wall suggested a liver abscess, and Dr. Armstrong advised an operation with an attempt to drain the abscess. A large abscess cavity was readily found and evacuated, but no amœbæ were found in the pus.

Following the operation the pulse was small and rapid and the patient gradually sank and died on the following day.

Autopsy 1909—229.— By Drs. S. B. Wolbach and W. W. G. Machlachlan.

E. T., age 34. One hour post-mortem. The subject has fair muscular and bony development, but is poorly nourished, length 165 cm. There is lividity of dependent parts, no œdema. The pupils are equal, 5 mm. in diameter. In the right nipple line immediately below the costal margin is a verticle abdominal incision, 6 cm. long. The wound contains a drainage tube from which a thick brownish puriform liquid can be expressed.

Peritoneal Cavity.—The anterior abdominal wall is adherent to a large solid mass in the upper half of the abdomen. The lower border of the adhesions runs diagonally downwards from the left upper quadrant to the right lower quadrant, crossing the mid line just above the umbilicus and extending almost to the crest of the ilium.

On separating the adhesions, which are of firm fibrinous material, the underlying mass is found to be the liver which is greatly enlarged. Its lower border almost reaches the level of the iliac crest. Lying between the diaphragm and liver is a large amount of greenish yellow gelatinous puriform material and more of this material pours out from the under surface of the diaphragm when the lower chest wall over the liver is pressed upon.

The omentum is thin, short and is adherent to the anterior abdominal wall immediately below the liver, by yellowish fibrinous material. The cæcum is covered with a layer three to four millimeters thick of yellowish white elastic fibrinous material which completely conceals the appendix. On removing the exudate the appendix is found lying on the outer posterior wall of the cæcum, it is directed upwards and has a mesentery. After removal of the exudate the appendix is normal in appearance. The pelvis contains a thin deposit of yellowish white fibrinous material, other peritoneal surfaces are normal. A few mesenteric lymph nodes are large and calcified, the largest is 2 cm. in diameter, other mesenteric lymph nodes are normal. The prevertebral lymph nodes are slightly enlarged but othewise are negative. The diaphragm reaches to the third interspace on the right side, fifth rib on the left.

Pleural Cavities.—The right side contains a small amount of reddish

yellow liquid and a thin layer of fibrinous material between the diaphragm and base of lung. The left lung is adherent at the base and posterior border by a few easily torn fibrous bands; there is no free liquid.

Pericardial Cavity.—Negative.

Heart.—Lungs and bronchial glands are negative.

Liver.—Weight 4,530 grms. The upper surface reaches to the third costal inter-space on the right side, the lower margin reaches almost to the crest of the ilium. The surfaces of the liver lying opposed to the diaphragm are covered with a thick layer of greenish yellow, gelatinous puriform material. Towards the dome this material changes to a dirty brownish color.

The surface of the liver is irregular, owing to a great number of projecting rounded eminences which vary in size from 2 to 6 centimeters. The small nodules are firm, the intermediate ones are soft and the largest are fluctuating masses. The nodules are present on all surfaces of the liver, some of the largest ones have concave summits. The appearance of the liver varies in different parts. In the lower half of the anterior and inferior surfaces the colour is mottled yellow and red. The red areas present the markings of liver tissue, the yellow areas are opaque, firm and plastic.

The upper half of the liver is similarly mottled, but contains more fluctuating masses. On section the solid nodules are yellow, the cavities are filled with greenish gelatinous material, and the intervening liver tissue is red and mottled with yellow areas and irregular streaks. The liver contains thirty spherical or ovoid cavities, all containing greenish gelatinous puriform material, the largest are 6 centimeters in diameter. Some of these have a definite thick whitish margin simulating a capsule, all have grayish white friable tags of tissue hanging from the inner surface. These tags are continuous with the yellowish border of the abscesses. In many places the yellowish firm borders of the abscesses are continuous with similar tracts of tissue extending throughout the liver substance. In large areas of yellowish liver substance there are usually occasional soft friable areas.

A large, firm, reddish adherent clot is seen in one of the branches of the portal vein, its extent was not determined in order to preserve the specimen.

Examination of scrapings from the cavity walls showed many amœbæ which became actively motile on warming the slides. These amœbæ correspond in size with amoba histolytica.

Spleen.—Weight 140 grms. The capsule is thickened where adherent to the diaphragm. On section the colour is normal. The Malpighian bodies are visible, trabeculæ prominent, consistency normal.

Pancreas, Adrenals, and *Aorta* are normal.

Organs of the Neck.—A few glands lying along the carotid vessels are large, but appear normal on section.

Gastro-intestinal Tract.—The œsophagus, stomach and small intestine are normal. The mucosa of the cæcum and the first ten centimeters of the ascending colon is deep red in colour, and there are many large and small ulcerations (twenty counted). Many of these ulcerations are oval in outline and the long diameter usually lies transversely to the long axis of the colon.

The smallest ulcers are not larger than one millimeter in diameter, and are situated on the summits of elevations of the mucosa 3 to 5 mm. in diameter.

The largest ulcers are 2.5 cm. in diameter. The large ulcers have distinctly undermined edges and are filled with a dirty grayish soft membrane which is easily removed. The edges are elevated and deep red in colour, in places suggesting hæmorrhage into the mucosa.

The majority of the ulcers do not appear to go deeper than the submucosa, though a few of the larger ones seem to extend into the muscularis. Scrapings from the ulcers show many motile amœbæ similar to those from the liver. The transverse and ascending colon, sigmoid flexure, rectum and anus are normal.

Bladder and Genitalia.—Normal.

Head.—Examination not permitted.

Anatomical Diagnosis.—Amœbic ulcerations in ascending colon and cæcum; multiple amœbic abscesses of liver; localized fibrinous peritonitis; acute pleuritis with effusion (left); sub-diaphragmatic abscess; calcified mesenteric lymph nodes; chronic fibrous pleuritis (right); chronic fibrous peri-splenitis; laparotomy; thrombosis of portal vein.

Microscopic Examination.—Heart.—Negative.

Lungs, (left).—Moderately injected. The alveoli are partially collapsed and the respiratory epithelium is swollen and generally nucleated. In many places the alveolar walls contain a demonstrable layer of connective tissue between the capillaries and epithelium.

Spleen.—Moderately infected. The follicles are normal in size; many contain eosine staining hyaline reticulums. Beneath the capsule is a thin layer of newly formed capillaries and connective tissue.

Liver.—The abscess wall consists of necrotic cells, detritus, polymorphonuclear leucocytes and contain amœbæ, many of which contain red blood corpuscles. There are occasional clumps of micrococci. The liver tissue surrounding the larger abscesses is completely necrotic, remote portions show necrosis with preservation of the liver columns and sinusoids. The only viable tissue is that of the portal canals and

occasional narrow zones of liver cells. There are many amœbæ and occasional clumps of cocci, the latter surrounded by masses of polymorphonuclear leucocytes. Numerous veins in the portal canal are thrombosed, and, in the thrombi, there are occasional amœbæ. In portions of the liver remote from abscesses there is very marked central necrosis. The middle half of the lobules are stained pink, the nuclei are swollen or small and densely stained. The outer zone stains normally. In general, the areas of necrosis contain neither amœbæ nor bacteria. The capsule of the liver is covered in places with organizing fibrinous exudate, in which no amœbæ can be found.

Small Intestine.—Negative.

Cæcum.—There is marked injection of the submucosa and mucosa. There are many swollen areas in the mucosa due to separation of the fibres by granular detritus, and leucocytes. These areas contain numerous amœbæ. A few amœbæ show pseudopodia, many contain red blood cells and chains of micrococci, and rarely an amœba is found with the peculiar radiate striations at the periphery described by Councilman and Lafleur. The ulcers have elevated overhanging edges, due to solution of the submucosa, and there are necrotic tracts leading for considerable distance beyond the ulcer into the submucosa. Some of these tracts contain great numbers of amœbæ.

The muscularis is invaded by necrotic tracts in places, and a few amœbæ are found in lymphatics and blood vessels beneath the peritoneum.

There are many polymorphonuclear leucocytes and small amounts of fibrin in the tissue surrounding the ulcers and necrotic tracts. The ulcers contain many bacilli and micrococci.

Pancreas, Kidneys, Adrenals and Thyroid are negative.

Epicrisis.—The pathological findings are those of a typical case of amœbic ulceration of the cæcum with multiple abscesses of the liver and localized fibrinous peritonitis.

The infection of the liver is complicated by a bacterial infection as shown by the puriform infiltration in places, and the demonstration of colonies of streptococci in the section, findings which are conclusive in view of the short time which elapsed between death and preservation of the tissues.

Nothing new can be contributed to the pathology from this case, and unimportant histological details have been purposely omitted in the above abstract from the protocol.

The demonstration of the radiate peripheral markings in a few amœbæ is of interest. As far as we know this is the first instance noted since the famed publication of Councilman and Lafleur. No explanation of the origin of this marking can be offered.

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CANADIAN MEDICAL ASSOCIATION.

By the time this number of the JOURNAL reaches its readers the 43rd Annual Meeting of the Canadian Medical Association will have begun in Toronto. The meeting will last until June 4th, and from the information which we have received from the Secretary it will probably be one of the most successful in the history of the Association. The Provisional programme has already been issued, and if it is lived up to, a body of material will be presented to the profession which is worthy of the highest consideration. Dr. Adam Wright, the President-elect, has worked unsparingly and he has had a generous support from the members of the Committee in Toronto. The Convocation Hall of the University of Toronto is most suitable for the purpose of the meeting, and the Queen's Hotel where the headquarters will be situated has a reputation for serving its patrons well.

The first general session will be held on the afternoon of the first day, when the President will be installed and the other opening ceremonies will take place. The first formal business will be to receive the report of the Milk Commission from the Chairman, Dr. Charles J. Hastings, of Toronto; and the remainder of the afternoon will be occupied by the addresses of Dr. Evans, of Chicago, and Dr. North, of New York. In the evening Dr. Herringham, of London, will deliver the address in medicine and this will be followed by a discussion on Dominion Registration which will be introduced by Dr. Roddick.

The address in surgery will be given by Dr. J. B. Murphy, of

Chicago, and the address in obstetrics by Dr. Henry C. Coe, of New York.

Two Symposia have been arranged, to which the various sections will contribute; one on exophthalmic goitre, the medical aspect of which will be treated by Prof. McPhedran, of Toronto; the surgical by Prof. F. J. Shepherd, of Montreal; and the pathological by a physician from New York; and another on psycho-neuroses, of which Drs. J. J. Putnam, of Boston, August Hoch, of New York, W. Hattie, of Halifax, and Ernest Jones, of Toronto, will each present various aspects. Medical education will be dealt with by Prof. J. C. Connell, of Queen's University, Kingston.

There will be sections in medicine, surgery, obstetrics, and gynecology, pathology, pediatrics, and diseases of the eye, ear, nose and throat. These will be held each afternoon. Extensive programmes have been prepared for each, some seventy papers in all being already promised. The Sections in medicine, surgery, obstetrics and pathology will each hold three morning sessions, commencing at 9.15 on Wednesday, June 1st. The Section of the eye, ear, throat and nose, and the Section on pediatrics, will each hold one session only, on Thursday, June 2nd.

On the afternoon of Thursday, 2nd June, there will be an excursion by the steamer Turbinia to Port Dalhousie; thence by electric railway to Niagara Falls. Refreshments will be served on the boat, and dinner at the Clifton House. The return journey to Toronto will be made in the evening. There will also be an excursion by special train to Guelph, as guests of the Guelph Medical Society, to visit the Ontario Government institutions, and other points of interest, leaving Toronto at 11 a.m. on Saturday. The annual meeting of the Canadian Medical Protective Association will be held on Friday afternoon at 5.30 p.m., when its president, Dr. R. W. Powell, Ottawa, will submit his annual report.

THE RECENT EPIDEMIC OF TYPHOID FEVER IN MONTREAL.—"THE LANCET," APRIL 23, 1910.

No official accounts of the epidemic of typhoid fever which commenced in Montreal and its suburbs in September of last year, and which virtually came to an end with January of this year, have been published. Nor is it likely that any correct figures showing the extent of the outbreak or the mortality-rate will be available, as owing to a variety of reasons a very large number of cases were not reported. Dr. J. E. Laberge, medical officer of health of the city of Montreal,* recently read a paper on the organization of the health department, in which he de-

* Dr. J. E. Laberge is Medical Officer of the Department of Contagious Diseases.—Ed. M.M.J.

plored the laxity of medical practitioners in failing to report cases of different infectious and contagious diseases. He stated confidently that less than half of the infectious and contagious diseases occurring in the city were reported to the Health Department, and alluded to the fact that in one district alone in the period from Oct. 15th to Jan. 1st last the officers of the Health Department had discovered 625 cases of typhoid fever, of which only 35 had been reported. Not only in the epidemic of typhoid fever just passed, but in former outbreaks of the disease, it has been very difficult to estimate the number of typhoid cases in Montreal and its suburbs, because the law in regard to the reporting of typhoid patients has been practically ignored by medical men, and the provincial and local boards of health have acquiesced in their disregard.

The report of the Health Department on typhoid fever for the year 1909 gives the number of cases reported in the city itself and districts under its jurisdiction as 1892. In September there were reported 66 cases, and in October 279 cases, in November 213 cases, and in December 704 cases. Figures obtained from the Health Department denoting the number of cases reported from January 3rd to 15th are 339. Consequently the number of cases officially reported from September 1st, the commencement of the epidemic, to January 15th is 1,601. Although the epidemic began to wane in the middle of January, and after that time died out somewhat suddenly, there was a large number of cases both reported and unreported from that time up to the middle of February, when the disease as an epidemic was to all intents and purposes over. From the middle of January to the end of the epidemic there were probably at least 200 more cases reported, which would bring up the total of reported case to 1,800. As it seems to be universally allowed that there were quite as many cases unreported as reported, a moderate estimate of the number of cases which occurred in the course of the epidemic will be 3,600. The disease was most prevalent in the outskirts of Montreal. For instance, in December, in 17 wards of what may be termed Montreal proper there were 231 cases reported, while in five suburban wards there were reported in the same period 467 cases. From January 3rd to 15th in Montreal there were reported 117 cases, while in six suburban wards 222 cases were reported. If population be considered, then the ratio of cases occurring in the suburbs to those in the city was nearly 4 to 1.

The difficulties in the way of arriving at an accurate presentation of the mortality-rate of the whole epidemic are insurmountable. The deaths from typhoid fever in Montreal for 1909 were, according to figures procured from the Health Department, 212. Taking the number of cases reported for 1909 as 1,892, this will give a death-rate of more

than 11 per cent. But if the number of reported cases be doubled, as it is believed that they should be, the death-rate will be brought down to under 6 per cent., which is by far the more likely figure. The Health Department in the statistics as to typhoid fever given from January 3rd to 15th supply the number of cases and deaths. The cases reported were 339 and the deaths 41, a death-rate of between 11 and 12 per cent. The hospitals of Montreal, however, in January published the following tables. The figures cover the period from September 1st to December 31st:—

Hospital.	Total cases admitted.	Deaths.
General	147	9
Royal Victoria	237	9
Western	74	6
Homœopathic	80	3
Notre Dame	114	15
Hotel Dieu	134	8
	786	50

This gives a death-rate of between 6 and 7 per cent.

In the first week of the epidemic the type of the disease was mild, but at the end of October it became far more virulent. In the Emergency Hospital, which was opened in the early part of January, 112 cases of typhoid fever were treated with 7 deaths, 2 deaths from perforation, and 1 recovery from the same, giving a death-rate of 6.25 per cent. The high death-rate at Notre Dame Hospital is attributed partly to the fact that at that institution several cases were taken which were almost hopeless from the first.

Outbreaks of typhoid fever occur with comparative frequency in Montreal and its suburbs, a winter never passing in which there are not a very considerable number of cases of the disease. As in former outbreaks of typhoid in Montreal, there have been in the one just over numerous cases of para-typhoid and of intestinal disturbances with high fever which have led some at first to deny the existence of typhoid fever on a large scale. The lax methods in vogue in Montreal as to reporting cases of infectious and contagious disease tend to retard remedial measures.

POSTPONEMENT.

It is with much regret we are obliged to announce that the ceremonies which were designed in connexion with the opening of the new Medical buildings of McGill University, have been indefinitely postponed on account of the death of His Majesty King Edward VII. At the

moment of the lamentable event the arrangements for this important affair were well forward. Letters had been sent out to all graduates in Medicine whose addresses were known, inviting them to a re-union in Montreal on June 6th and 7th. It had long been felt that it would be of mutual advantage to the University and to the Alumni if a re-union were held at the time of the next convocation. His Excellency the Governor-General, the Visitor of the University, had consented to be present, and a programme extending over two days had been arranged. Class re-unions were also organized by all but thirteen of the forty-five in which the Alumni are included. After due consideration by the Faculty and by the University the conclusion was reached that the celebration should be deferred until a future occasion. We feel sure that all graduates will concur in this decision, and that they will hold themselves in readiness to assemble when next they may be called upon. Any regret which may be felt over this postponement will, we feel sure, be lost sight of in the general regret at the circumstances which made it necessary.

At the last meeting of the American Gynæcological Society, held at Washington, May 3rd to 5th, Dr. J. Chalmers Cameron, of Montreal, was elected an Honorary Fellow of the Society. We are informed that the proposal was most cordially received. Dr. Cameron and Dr. William Gardner are the only two Honorary Fellows of this Society in Canada. This mark of appreciation of Dr. Cameron's high services to the teaching and practice of obstetrics comes at an opportune moment, namely, the 25th year of his occupancy of the chair of obstetrics in McGill University. The only other occupant of the chair who in duration of time at all comes near to Dr. Cameron is Dr. McCallum, who held the position for fifteen years. Dr. Cameron has been a valued and frequent contributor to this JOURNAL, and we desire to offer to him our congratulations upon the recognition which he has received in the larger world

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An International Hygiene Exhibition has been arranged in Dresden from May to October next year. A handsome volume of 60 pages has been issued describing the arrangements in complete detail. The programme gives in broad outlines the substance and arrangement of the Hygiene Exhibition. For the classification of the matter in the twelve main groups, scientific principles are adopted as the standard. Within these groups, practical hygiene and legislation are treated; also social reforms, as far as they fall within the range of hygiene. Only the diseases particularly prevalent among all civilized nations receive special

treatment under separate headings. Many departments which in the exhibition itself will occupy a large space are designated only by single key-words, but they will receive room corresponding to their importance. The presidents of the various groups are chosen from the ranks of German scientists, but prominent men of all nations will be represented among the honorary presidents and members of the committees. Material guarantees for the undertaking have been secured. The Royal State Government voted large supplies; the city offered the free use of a spacious exhibition building, besides a liberal contribution, and in a short time the citizens subscribed or pledged over a million marks for the security fund. Canadians visiting Europe next year would do well to bear this Exhibition in mind.

Explanation:—In the issue of this Journal for May an item of "News" became misplaced and appeared at page 363 when it should have been inserted between pages XX and XXIII.—[Ed. M.M.J.]

Reviews and Notices of Books.

"Diseases of Children." Edited by Abraham Jacobi, M.D. Modern Clinical Medicine series. Published by D. Appleton & Co., New York and London.

This book is an authorized translation from "Die Deutsche Klinik," in the general editorial supervision of Julus L. Salinger, M.D., and consists of a series of monographs arranged to form a more or less systematic treaties on pediatrics.

The contributors are 23 in number, and in the list of names are all the great German and Austrian authorities. The first article on diseases of the new born in the first days of life is contributed by Prof. Keller, of Berlin, and is in itself one of the most interesting and thoroughly scientific articles on this subject with which the reviewer is familiar.

Prof. Czerny, of Breslau, contributes an article on infant feeding that is somewhat remarkable. After the first few days of life when infants take very few meals spontaneously, he recommends that five or six breast feedings are sufficient, thus leaving an interval of from three to five hours between feedings. He thinks that restlessness in the young infant indicates a disturbance in nutrition, which calls for a prolongation rather than a shortening of the period between the feedings. He thinks that after six months children develop better when not fed exclusively from the breast. The first meal given to the child is a meat broth thickened with fine grits until it has obtained a "pappy" con-

sistence. Later a meal of cow's milk thickened with some cereal is given.

The following sentence is worth quoting: "It is advisable not to endeavour to increase the weight of the child during the weaning period, and if this should occur, to limit the amount of food as the danger of hyper-nutrition is particularly great during this time, although serious consequences may not present themselves until some weeks have elapsed." He insists that a child should never be wakened from sleep to be fed.

As a principle he maintains that a child which must be nourished artificially should receive the smallest quantity of food that is necessary for a proper development of the body, and that if there is a sufficient increase in the body weight the amount of food must not be increased as the child advances in age. He does not place great reliance upon the calories in the food supply to an infant, stating that is is not by any means the only or essential factor in the estimation of food value.

Monti discusses the most common infections of the oral mucous membrane in children, and Escherich the acute digestive disturbances of infancy, but the articles are not up to the standard set by some of the other writers. Space does not permit of a detailed consideration of the various interesting articles which make up the work, but mention should be made particularly of Zappert's rickets, and Holhsinger's on convulsions in children. The latter constitutes one of the most interesting and able articles in the series.

Among other subjects discussed are the Meningitis of Infancy; Spinal and Cerebral Palsies; Chorea; Pneumonia; and the Infectious Diseases which bring the book to a close.

Heubner, of Berlin, writes in a peculiarly interesting way of scarlet fever. He says that theoretically the employment of serum in the therapy of scarlet fever does not promise very much at present, and is only justifiable in those desperate cases in which all other previous measures have proven ineffectual. He speaks rather favourably of the employment of ichthyol-lanolin salve as recommended by Seibert, of New York, He states that he never seen a case of scarlatina gravissima recover.

Throughout the work the editor, Dr. Jacobi, has in foot notes added much from his rich experience, that enhances the value of the treatise. The work is to be recommended not only for its intrinsic worth but also because it enables one to obtain a very comprehensive understanding of German pediatrics. The editor and translator have accomplished their duties in a most satisfactory manner that leaves little to be desired, while the publishers have produced a book which is quite up to their usual standard.

D. J. E.

The Principles of Pharmacy. By Henry V. Arny, Ph.G., Ph.D., Dean and Professor of Pharmacy in the Cleveland School of Pharmacy, Western Reserve University, Cleveland, Ohio. 246 original illustrations; pages, 1175. W. B. Saunders Company, Philadelphia, 1909.

Professor Arny has written an admirable textbook for students of pharmacy, though, perhaps, too extensive for medical students. The work is divided into seven parts. Of these the third and fourth, treating of the inorganic and organic chemicals used in pharmacy, are worthy of note, each being preceded by a short introductory chapter on the principles underlying the science of chemistry and the theory of the chemicals under discussion. These will no doubt prove of much value to the students. The other parts are written in excellent style and are complete in detail. On the whole we recommend the book very highly.

Epidemic Poleomyelitis.. Report of the Collective Investigation Committee on the New York Epidemic of 1907; Nervous and Mental Disease, Monograph Series No. 6. The Journal of Nervous and Mental Disease Publishing Co., New York. $2.00.

This report is a most interesting and important contribution to the steadily increasing literature on this important subject. The Committee was appointed by the New York Neurological Association in October, 1907. They obtained at once the active support of a committee appointed by the section on pediatrics of the New York Academy of Medicine, and of the Dr. Flexner, of the Rockefeller Institute. The Department of Health of New York City also gave willing assistance. Subcommittees were formed to study the various aspects of the question. It is estimated that at least 2,500 cases of acute poleomyelitis occurred in New York during the summer of 1907; records of 752 cases were obtained. The report takes up the epidemiology of the disease, the conditions preceding the onset, and the symptomatology. It is worth noting that paralysis completely cleared up in 5.3 per cent., and that there was "almost complete disappearance of paralysis in 1.8 per cent. so that a most satisfactory recovery took place in 7.1 per cent of all cases. On the other hand some form of paralysis remained in 86 per cent. In 7 per cent. the condition was not properly accounted for.

The experimental work by Flexner and Lewis adds another, and by no means the former's least valuable contribution, to our knowledge of the causation of the disease—for which the whole world will be indebted. He has shown the disease to be an infection, causing the disease in monkeys and transmitting it to other monkeys. He has culti-

vated the virus in ascitic bouillion and caused the disease in monkeys by the injection of his culture. He has further shown that the virus will penetrate a Berkefeld filter. He has demonstrated that it retains its virulence afte having been fdozen for a considerable time. He concludes that it is too small to be seen under the microscope, and compares it to the unknown virus of rabies. It is not too much to hope that in the near future we may know more of this terrible disease, how or by what it is transmitted, and then how to eradicate it. The chapter on the pathology by I. Strauss confirms the work already done by Wickman, Hurbitz, Scheel, and others. Unfortunately there is as yet nothing new to be added to our knowledge of treatment.

THE SEXUAL LIFE OF WOMAN IN ITS PHYSIOLOGICAL, PATHOLOGICAL, AND HYGIENIC ASPECTS. By E. HEINRICH KISH, M.D., Professor in the University of Prague. Translated by M. EDEN PAUL, M.D.. New York. Rebman Company; pages 686; price $5.00.

This book really does treat with scientific calmness of that part of woman's life which makes up so much of it. Either negatively or positively the sexual element in the female is of so much importance that for practical purposes all others may be neglected. Not only is it the dominating influence upon her own life, but it also determines the happiness or misery of the male who, in a monogamous society and by some fortuitous circumstance, finds his existence indissolubly bound up with hers. In communities like the United States, where one marriage in twelve is terminated by divorce, and in other more primitive communities where a greater promiscuity of living is practised, the aberrations in the sexual life of the woman are not so inconvenient as they are in a country like Canada where a strict monogamy is observed, and the tie of marriage is rarely broken save by death. But this book does not deal with the vagaries in the sexual life of women: it establishes rather the normal, and emphasizes the antithesis which exists between the male and the female of the race to which we belong. It also conveys the impression, that in sexual matters the members of that race have little "preeminence over the beast." It is not exactly a book which is favourable to those elaborate illusions which society has created for itself; and it is all the more iconoclastic, since it is as free from obscenity and lasciviousness as such a book may be. We are accustomed to think of ourselves as "the paragon of animals," "of noble shape, God-like, erect, and tall, with native honour clad in native majesty." This book rather enforces the conclusion of Hamlet that we are merely "beasts—the chief of beasts." It makes painful reading. The obscure learning which the author dis-

plays is quite remarkable, and his medical knowledge is equally great. Nothing has escaped him, not even that rare case which Egerton Y. Davis reported from Caughnawaga in th New York *Medical News,* in 1886, a case, it may be added, which came within a little of bringing fame to this JOURNAL, when it was offered to its then editor, the late Dr. George Ross, and was declined for publication by him. This book is the most elaborate study we have seen of the sexual life of woman, and we have no hesitation in commending it—plain and coarse as it is—to all who have any curiosity about that incomprehensible subject.

Medical News.

MONTREAL DISPENSARY.

The annual meeting of the Montreal Dispensary was held May 10th. The honorary secretary, Dr. H. B. Camichael, presented the report, from which it appeared that during the past year 23,733 applications for treatment were made, compared with 21,085 in 1909. These patients were classified as to their religions as follows:—Roman Catholics, 13,-305; Protestants, 8,247; other ceeeds (mostly Jewish) 2,181; and according to the different departments in which they were treated as follows: General department, both medical and surgical, 8,578; disease of eye and ear, 2,047; diseases of women, 1,801; nose and throat, 1,015; skin, 3,079; children, 3,059; tuberculosis, 2,127; nervous diseases, 262; dentistry, 104.

The following officers were elected: President, Mr. G. F. C. Smith; first vice-president, H. S. Kerry. second vice-president, John Patterson; hon. treasurer, Norman F. Nash; hon. secretary, Dr. H. B. Carmichael.

Committee of management: George Esplin, Chas. J. Phillips, I. H. Stearns, A. Piddington, Wm. Drysdale, Dr. J. M. Jack, Dr. H. D. Hamilton, Dr. R. A. Kerry, Dr. Geo. A. Brown.

POST GRADUATE COURSE, 1910.

The Medical Faculty of McGill announces that an extended course of study for Graduate Students will be given during the coming Summer. Beginning on Thursday, June 9th the course will be continued for a period of six weeks, during the first half of which the work will be conducted in the Royal Victoria and during the second half in the Montreal General Hospital.

In the Royal Victoria Hospital the following courses have been arranged for the first three weeks:—

Medicine: Ward rounds twice weekly throughout the entire period by

Dr. John McCrae; Dr. McCrae will also give one demonstration in the Alexandra Hospital for Infectious Diseases; two classes weekly throughout the entire period in Methods of Physical Diagnosis, by Dr. H. B. Cushing; one demonstration weekly on Clinical Laboratory Methods, by Dr. J. C. Meakins.

Surgery: An operative Clinic twice weekly throughout the entire period, by Dr. James Bell; Ward rounds twice weekly and one Out-Patient Clinic weekly, by Dr. E. W. Archibald; Ward rounds twice weekly and one Out-Patient Clinic weekly, by Dr. C. B. Keenan.

Operations on the Cadaver: A course of practical instruction in operations on the cadaver, six periods during the second week, by Dr. A. E. Garrow.

Obstetrics: A course of two demonstrations weekly in clinical obstetrics in the Montreal Maternity Hospital during the first and third weeks, by Dr. D. J. Evans.

Gynæcology: One theatre clinic weekly throughout the entire period, by Dr. Wm. Gardner; one Clinic weekly on Minor Gynæcological Operations, by Dr. W. W. Chipman; one Out-Patient Clinic weekly, including demonstrations in the use of the Cystoscope in the Female, by Dr. J. R. Goodall.

Oto-Laryngology: Two practical demonstrations weekly during the first and third weeks, in Intubation, and Simple Mastoid Operations, by Dr. H. S. Birkett; one Clinic weekly throughout the entire period on Treatment of Diseases of the Nose, Ear and Throat, with practical instruction in the use of the Laryngoscope, Rhinoscope, and Auriscope, by Dr. W. H. Jamieson.

Ophthalmology: One Clinic weekly throughout the entire period on External Diseases of the Eye, by Dr. W. G. M. Byers; one demonstration weekly throughout the entire period on the routine examination of the Eye, by Dr. F. T. Tooke.

Diseases of Children: One Clinic weekly throughout the entire period, by Dr. F. M. Fry.

Orthopædics: One Clinic weekly throughout the entire period, by Dr. W. G. Turner.

Neurology: One Clinic weekly throughout the entire period, by Dr. C. K. Russel.

Morbid Anatomy: One demonstration weekly on Post Mortem Work, by Dr. Gruner.

For the second period of three weeks the following courses have been arranged at the Montreal General Hospital, each of these courses extending throughout the entire period:—

Medicine: Ward rounds, twice weekly, by Dr. H. A. Lafleur; two classes weekly in the Methods of Physical Diagnosis, by Dr. C. A. Peters; one demonstration weekly in Clinical Laboratory Methods, by Dr. A. G. Nicholls; one Out-Patient Clinic weekly, by Dr. C. P. Howard.

Surgery: Operative Clinic, twice weekly, by Dr. J. M. Elder; Ward rounds, twice weekly, by Dr. K. Cameron; two Out-Patient Clinics weekly, by Dr. E. M. von Eberts.

Operative Surgery: Dr. von Eberts will also devote one period weekly to practical instruction in Operative Surgery, with special reference to the technique of abdominal operations.

Obstetrics: Two demonstrations weekly in Clinical Obstetrics in the wards of the Montreal Maternity Hospital, by Dr. H. M. Little.

Gynæcology: One Operative Clinic weekly, by Dr. F. A. L. Lockhart; one Out-Patient Clinic weekly, by Dr. D. Patrick.

Ophthalmology: One Out-Patient Clinic weekly, by Dr. Geo. Mathewson; one Out-Patient Clinic weekly, by Dr. Hanford McKee.

Laryngology: One Out-Patient weekly, by Dr. H. D. Hamilton.

Orthopædics: One Out-Patient Clinic weekly, by Dr. Mackenzie Forbes.

Diseases of Children: One Out-Patient Clinic weekly, by Dr. C. P. Howard.

Neurology: One Out-Patient Clinic weekly, by Dr. A. A. Robertson.

Dermatology: One Out-Patient Clinic weekly, by Dr. G. G. Campbell.

Genito-Urinary Diseases: One Out-Patient Clinic weekly, by Dr. R. P. Campbell; Dr. Campbell will also give one demonstration weekly on the use of the Cystoscope.

Morbid Anatomy: Two demonstrations weekly, on Post-Mortem work, by Dr. S. B. Wolbach.

The post graduate course is open to graduates of medical schools in good standing.

Intending candidates must first register with the Registrar of the Medical Faculty.

The fee for the course, including registration, is $50.00, payable in advance at the office of the Bursar of the University.

Receipts for fees paid must in all cases be shown to the Superintendent on the occasion of the first demonstration in either hospital.

Applications will be received and further information furnished by J. W. Scane, M.D., Registrar Medical Faculty, McGill University, Montreal.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

WESLEY MILLS, M.A., M.D., Professor of Physiology in McGill University. "Some Considerations Bearing on the Surgeon, the Patient, the Student, and the Nurse, based largely on the personal experiences of the writer." Read before the Montreal Medico-Chirurgical Society, January 21st, 1910. *British Medical Journal.*

I propose to do this evening what I think is entirely new in this society, to present a paper based on the writer's own experiences as a patient. In doing so I am aware that I am taking some risks, but I know most of the members of the society well, and I believe I shall be accorded the same kind consideration as has always been shown me during the twenty-five years that I have been enrolled among its members. It is not altogether pleasant to have to confess to such a record of physical weakness as I must lay before you; but these experiences, with all the pain and misery associated with them, have taught me so much and produced such deep convictions with a practical bearing that, did I not speak, I would feel almost guilty of being untrue to myself and to my past as you know me.

I could fill a volume with views based on new conceptions of physiology and another similar one bearing on psychology. Indeed, that I can claim your attention for only a short time on one evening is the the chief difficulty under which I labour; for I fear that, in merely touching on subjects that to be adequately understood would require deliberate attention and illustration, I may fail altogether in making my meaning clear. But so many are now anxious to get the ear of the society, and this is so healthy a state of things that however deeply I may feel the practical importance of some of my views, I must not claim from you more than a little extra time and patience.

Life to be healthy should, in a human being, be made up of reflection and action. The medical man is apt to neglect the former by reason of the numerous calls made upon him; but he himself, and his profession and the public, suffer from this. Action should be based on knowledge. What was once good practice is so no longer because of the increase of knowledge. But the so-called knowledge is of very varying degrees of completeness and value. Much that passes as knowledge and even suffices in a fashion for practical life, is worth little in the development of the individual's nature. A man from viewing and handling

apples may have what suffices for commercial purposes fairly well, but if he has never tasted an apple his knowledge is of little real value as judged by an educational standard; anl no amount of the most graphic description can give a knowledge of an apple that one bite of it will communicate.

To him that has never felt real pain a description of a toothache is mere sound signifying nothing. The man who has been absolutely healthy and vigorous all his life—that is, beastly healthy—is also narrow and ignorant as regards many of those higher things the comprehension of which makes us peculiarly human, such as not a little in literature and art, even much of psychology and philosophy; in a word, much of life in its breadth and depth. The only highest knowledge is realization. A grain of realization is educationally worth a ton of other kinds of knowledge, for it alone is the key that unlocks the real secrets of life. There is no such enviable quality as that which helps one human being to put himself in the place of another. We are born with very varying degrees of capacity to do this. To all, however, endowed by Nature, some experience of life's joys and sorrows alike, including physical ills, is necessary; and I am now convinced that most men have much less ability to put themselves in the place of others than they suppose.

When you hear my history as a patient during the past year, I think you will admit that I have some special qualifications to speak on certain matters. On the subject of pain and misery generally you may be ready to admit that I have graduated to the rank of an authority. But it might not occur to you to think that on other subjects, in fields that fall little under the ken of the so-called average man or even average doctor, there has been some general enlightenment. On such dark subjects as dreams, obsessions, delusions, illusions, the importance of the fundamental conceptions of time and space, hypnosis, the subconscious, and many others, the world is a new world to me. This enlightenment has not noly served to emphasize the ignorance of most of us, but to make me feel how little I even yet understand some of the states of my fellow men. I believe that even those long associated with the insane do in any true sense understand them but very imperfectly.

I have been dealing in abstract statements, perhaps some of them almost truisms, yet truisms of a practical importance that is very imperfectly realized. Before passing on to give the history of my case, allow me to put in a few brief sentences some of the conclusions to which I have been led, based on my past experience as illuminated and largely interpreted by my more recent knowledge gained through

so-called misfortune, but which is only so when regarded from the narrower point of view I shall now keep largely to those convictions which have a practical bearing.

1. Realization is the highest kind of knowledge. Most men are to some extent handicapped in the practice of the medical profession by a lack of experiences of the sort which fall to their patients. Development and the highest preparation for action come from the mind that has felt sorrows and pain as well as joy. Much of what is best in art and literature—that is, much of the best teachings of the world—has come to it from the men of sorrows. The greatest musical symphony ever written, expressing as no words can the joy and the sorrow of life, sprung from the mind and heart of a man of many griefs—the unrivalled Beethoven.

2. The medical education of the day is defective in two respects: (*a*) The student is graduated without certain realizations he might have, and (*b*) without a certain kind of practical knowledge all who practise medicine require. In my opinion a medical man in starting on his career should not only *know* all a nurse does and a great deal more, but be able to *do* all that she can do; and as about 90 per cent. at least of any graduating class are to be general practitioners, and not teachers or employed in scientific research, I would, if necessary, take the time required to give them, when students, a practical knowledge of all that is now required of a well-trained nurse from the time now given to anatomy, physiology, chemistry, pathology, etc.

3. Pain and the misery associated with profound shock are such great evils that they call for special consideration. When a patient is confined to his bed his comfort in every respect should receive attention, for it is not only important to get the surgeon's wound healed, but to keep the patient from misery while it is being healed. A life filled with suffering in any form is not in itself worth living, from which certain conclusions follow as regards both nurses and doctors. A nurse who is merely a surgeon's assistant or dresser, as I have by personal experience found some to be, fails greatly in her duty; and the surgeon who never had certain experiences, as, for example, in passing a catheter on himself, can scarcely be considered adequately fitted for his work.

4. Shock is so little understood, so widespread, and so great a source of danger and misery, that the study of its nature, prevention, and treatment should still further engage the attention of the whole profession. I scarcely know any subject so urgently deserving the attention of the profession.

5. Many in the nursing profession are ill adapted to it, while we fail

to attract to its ranks many women who would be invaluable, but who seek other avocations. The fundamental remedy is to make the profession more important and honourable in the eyes of the public.

6. Our medical students should be made to realize the importance of the administration of an anæsthetic. They should be trained in producing anæsthesia, general and local, by experts. Much of the administration of anæsthetics on the American continent, as compared with that in England as carried out by professional experts who give their whole time to this, seems to me in comparison barbarous. Is it not time that we encouraged the formation of a somewhat similar class in the profession on this side of the water?

These are a few of the subjects on which, after my trying experiences, I feel very deeply.

Now to give you a very brief history of my case, not for discussion in detail, as my operating surgeon is not present, but rather to indicate to you on what special personal experiences I base the conclusions I lay before you.

The profession is, I am inclined to think, perhaps almost unconsciously to itself, entering on a new epoch—one in which the psychological manifestations in the patient will receive possibly as much attention as the physical, and in some cases more. We are beginning to pass from a condition when as a profession the psychological has been either ignored or treated in the most empirical way. Yet the day has never been when the really great physician ignored the mind. He has been, consciously or unconsciously, given to minister not only to the mind diseased, but to the mind in the diseased subject. We are beginning, however, to recognize that this is not enough, but that psychological science must be applied with all the skill possible in dealing with every patient, because the body is greatly influenced by the mind, and because all sense either of pain or well-being is finally a matter of the mind. Having for some years advocated the introduction of the study of psychology into the medical curriculum, you will be prepared for the importance I attach to noting psychological conditions in myself during all the stages of my illness. Only those who realize two things can possibly understand much that lies deep among my convictions. I believe (1) that the only real possession is appreciation. I may own a beautiful picture, a work of the highest art, but if you appreciate that picture in the sense of feeling its real worth more than I do, this treasure is yours rather than mine. And (2) that pain, when it passes beyond the degree when it serves as a warning, is an unmitigated evil.

It follows that life is valuable to any individual in proportion as his

consciousness is free from pain or uneasiness on the one hand, and on the other filled with appreciations—the more numerous and the deeper the better.

Perhaps no one has made so clear a law of compensation that seems to exist in the universe as Emerson. There is no situation that is utterly bad—that is, wholly without compensation. This, however, is only true if we take life as a whole, and believe that existence is continued beyond this present time and state.

Perhaps the best service I can do is to try to show what have been some of the compensations—some of the many—that went with the various stages of experience that fell to my lot last year. These advantages or compensations consisted of a new or clearer views on a variety of subjects, a large proportion of which would have been impossible to me apart from my so-called misfortunes. I propose, then, now to give a very brief history of my case, noting some of the compensations associated with each stage of its development.

History of the Case.

First Stage.

The previous history of the patient as good. He had had only one serious illness (in youth) in the form of bronchitis. For some years micturition had been rather too frequent, especially at night. An acute condition, marked by irritation and very frequent micturition, began early in June, 1908. This was attributed by the patient to an exacerbation, owing to catching cold, of a condition supposed by him to be hereditary sensitiveness of the bladder. The heredity, as regards the bladder especially, had led to the condition in question, in spite of the patient having lived soberly and physiologically righteously in this present world. The diagnosis of enlarged prostrate was made and palliative treatment recommended. As there was at times retention to the extent of over 30 oz. the gravity of the situation can be understood. Catheterization with a soft rubber instrument was carried out two and sometimes three times daily for a month, the result being relief of urgent symptoms, but there remained residual urine to the extent of 18 to 20 oz.

Operation had been hinted at more than once. The patient learned self-catheterization, and, hoping for further improvement, sailed on July 16th for England. The voyage was very disagreeable, and to this rather than lack of care the patient attributes the fact that the bladder became infected and urethral fever set in.

Second Stage.

Compensations.—New ideas as to sensations; on the value of mental treatment; and on the selection and training of nurses.

Consultation with a London general surgeon who was a specialist in urology. He recommended immediate prostatectomy. This operation was carried out suprapubically on August 18th, the anæsthetic being administered by a specialist, and in a manner that surprised the patient, who had inhaled ether once in Canada at the hands of a house-surgeon. The operation was followed by a considerable shock. By a misunderstanding the patient was allowed a very small quantities of water after the operation, and suffered greatly from thirst. The wound where the tube for drainage had been inserted was very slow to heal, not completely closing till the thirty-first day after the operation. During the greater part of this period the bladder had been washed out with an antiseptic solution. Throughout the whole history of the case there had been great difficulty at times in introducing a catheter, which was the cause of much suffering—and, in fact, before the first attempts at passing a catheter after the operation were successful, I was again obliged to submit to ether anæsthesia.

On the twenty-sixth day my surgeon was obliged to take a holiday. On the second day of his term his substitute—in fact his house-surgeon—so passed a catheter that I felt as if a lance were being suddenly thrust into me. The same day urethral fever set in and continued till all use of the catheter and irrigation of the bladder were discontinued. During this period the urine had become very foul, but improved when the local treatment was discontinued. My general health was very bad. To this unfortunate period I trace most of the misfortunes that overtook me later. My surgeon on his return recommended change from the nursing home to my own rooms and going into the fresh air. On the thirty-third day I began to sit up on the side of the bed and to learn, like an infant, to walk again. Two months from the date of operation I left for my London home, my general health being rather poor, and the tone of the bladder distinctly bad. I took exercise, and used mental tonics, in the form of reading, attendance at concerts, etc.

Compensations.—This was one of the most fruitful periods to me of all. New light came on such subjects as dreams; the origin, nature, and importance of our conceptions of time and space; the interdependence of the body and mind; on the subconscious; the nature of obsessions; the narrowness of our ordinary view of things; the limitations of the healthy man, etc. On the physiological side I was profoundly impressed with the importance of the study of shock; of the avoidance

of following the same routine with all patients; of nurses being trained to consider the patient's comfort, and not to be mere surgeons' dressers; of their being trained in regard to anatomy and physiology in a very practical way, so as to understand the question of bodily tension and relaxation involved in turning patients with abdominal wounds, etc. Of the great value to a medical man of sound judgment, of common sense as applied to medicine. I also became profoundly convinced that in America we hould better our administration of anæsthetics.

Third Stage.

Although things went fairly well with me the urine never cleared up, and the tone of the bladder remained unsatisfactory. On February 18th, 1909, my condition grew worse; an abscess formed, and pointed at the site of the part of the surgeon's wound last to heal. After a temporary closure of this bladder fistula, it reopened in a few days. The patient was again taken to a nursing home—a new one, in which things generally were managed in a way much more to my mind.

For the third time an anæsthetic was administered, and a gum elastic catheter tied in the bladder. This failing to drain, was replaced by a metal catheter, which was introduced under cocaine, and in this way the bladder was washed out, the whole process, in spite of the use of the local anæsthetic, being very painful. Soon the metallic catheter was tied in, and the patient enjoined to lie constantly on the back, with as little movement as possible, day and night. During the first period the catheter was kept in two days and two nights. The opening closed, but soon reopened. The surgeon was much discouraged, but resolved to try the method once more before resorting to another operation (cutting into the bladder). The second ordeal lasted three days and three nights, and was successful. You can but faintly realize the suffering involved in this. During this time my general health was bad, and the urine markedly abnormal.

After continuous irrigation, sometimes twice and three times a day, there was a decided improvement in vesical and general conditions. The patient then learned to irrigate his own bladder through a soft catheter, which soon had to be changed to a gum elastic one. On May 26th, the patient having again learned to walk, returned to his own rooms.

Compensations.—A world of knowledge regarding reflexes; light on the physiology of locomotion; on anæsthesia; pain; hypnosis; and much generally in regard to the relation of mind and body.

The nurses in this home were not merely surgeon's assistants. They all looked carefully to the physical and mental comfort of the patient,

though some were more satisfactory in this respect than others. The head nurse, or lady superintendent, presiding over the department of the house in which my room was situated, was an almost ideal woman for the position she occupied. She worked herself with the nurses, and this explains much. It was worth a great deal to know such a woman.

Fourth Stage.

On June 4th an attack of septic epididymitis necessitated my again entering the home. The treatment consisted in rest, local support, counter-irritation, and pressure. The tenderness disappeared speedily, but the parts long remained enlarged, though this was in no sense troublesome. After about three weeks the patient again returned to his own London home.

Fifth Stage: Convalescence.

On the advice of my surgeon I spent the month of August at a seaside resort—Eastbourne. I lived most of the time in the open air. The change acted most favourably, and this I attribute, not only to physical agencies, but also to psychical ones, especially, after being shut up so long, seeing so many human beings, who were young, healthy, and æsthetically attractive. On September 9th I sailed for Montreal.

To summarize the whole case one might put the matter thus: A patient that had been previously very free from disease had for years shown symptoms of enlarging prostate. He suffered from a bad bladder heredity, which explains the origin of the condition.

After palliative treatment there was prostatectomy. Out of this and subsequent complications there arose a condition of things that resulted in the patient taking an anæsthetic three times; having to learn to walk afresh three times; submitting to unlimited catheterization by means of the three kinds of instruments; much irrigation for an infective cystitis; formation of a bladder abscess and fistula; and being confined to bed at different times for a period amounting in all to about four months—a vast experience full of new light on many things that it is hoped may be helpful to him in this state of existence and those subsequent ones in which he must now more than ever believe.

I would like to add to those already made a few remarks, especially about some matters that seem to me of great practical importance.

My Montreal surgeon who made the diagnosis of enlarged prostate and carried out the palliative treatment was, I am now convinced, persuaded from the first that only operation would remedy the state of things that existed. But I cannot too much admire the tact and fine

feeling he showed. All the preliminary treatment by catheterization was valuable, perhaps essential, in bringing the patient to a realization that there was but one remedy, even if that were a radical one not wholly free from danger to life. Had I been told bluntly at the first interview that such an operation must be performed, the mental shock would likely have been serious, and that this experience was spared me makes me grateful to my surgeon. You all know him and you know him not. I must not fail to pay a tribute to his two house-surgeons, who carried out the catheterization with a care, intelligence, skill, and consideration for the patient worthy of all praise. For twenty-eight days these young men catheterized the patient two, and often three, times a day, giving very little pain, and with no appreciable rise of temperature or other bad symptom, and that in a very sensitive subject; while an English house-surgeon so passed the catheter on his second visit that typical urethral fever followed on the same day. True the patient then had a certain amount of cystitis and was not in as good general health as before, but does that account for the difference? I think not. The remark of one of the Montreal-house surgeons to the other when handing over the case to him is noteworthy. When asked how often he used the catheter on this patient, his reply was, "Three times a day, and every time with fear and trembling." This, in my opinion, is the only spirit in which any man should ever take a catheter into his hand for use on a new patient, or for use on any occasion with certain subjects. Brilliancy and rapidity in passing this instrument are not to be encouraged. The hands of my house-surgeons in Montreal moved like snails. Would that I could say the same of the substitute of my London surgeon. On one occasion my London surgeon himself must have occupied at least twenty minutes before the catheter could be got into the bladder, and yet no urethral fever followed. And though this involved much pain for the patient, in spite of the use of cocaine, I attribute the favourable result to the fact that there were no violent or even rapid movements and no suddenly induced pain. Unless a man uses a metal catheter on himself it is difficult for him to realize how much pain there may be. There is a sort of stretching sensation, even when cocaine has been used freely, and there is a peculiarly disagreeable shock just at the moment a metallic catheter enters the bladder which it is difficult to describe and I am sure impossible to understand without some actual experience.

Our knowledge of general, and especially skin sensations, has recently been greatly enlarged, chiefly by certain English investigators, and so far as pain is concerned I could add to what is already known. Reflex

pain or referred pain is characterized by its diffuseness and its massive quality, by its being difficult to locate definitely, and by the fact that it may be far from the seat of the original cause of the pain.

As already stated, on two occasions I had a metallic catheter tied in for several days and nights, and to avoid injury was obliged to remain as nearly absolutely motionless as possible all the time. The whole constituted the most trying ordeal through which I have ever passed. Apart from the local pain in the urethral region and pain in the back from constantly lying on it almost motionless there was severe referred pain. It was impossible for me to say exactly where this was located, but it certainly was either in the scrotum or its contents principally. And in this connexion let me point out that no function of the body may escape the evil influence of such severe and long-continued pain. On both the occasions referred to I vomitted in the evening food taken in the morning in an absolutely undigested condition. Here, then, was a case of reflex vomiting, traceable to irritation in the urethra and also a cessation of digestion due to the same cause and to pain. I believe *the urethra to be the most sensitive and most dangerous reflex tract in the whole body.*

You will understand, therefore, putting all these facts together, why I believe that no student should be allowed to graduate till he has had certain experiences, some of them in his own person. Among these I would certainly include the passage, under skilled observation, of a soft rubber and a gum elastic catheter on a subject, and the passage previously of both of these and a metallic catheter on himself. It is difficult for me to believe that, had the London house-surgeon who was my surgeon's substitute had any such personal experience, that I would have so suffered at his hands, to which more than anything else my subsequent misfortunes were, in my opinion, due.

Allied to pain, yet very different from it, is shock. One who has been exceedingly weary or utterly exhausted is in a better position than any one else who has not had the actual experience to understand the sensations associated with shock. Pain one can to some extent describe, but shock is beyond words. I would that every member of the medical profession could have this experience for two minutes; it would be invaluable to him. But I would not wish the worst human fiend the experience of two hours of shock. It is very imperfectly understood physiologically. Blood pressure cannot in itself be a final explanation for any physiological condition, though altered blood pressure is undoubtedly associated with many. No doubt there is low blood pressure; but an explanation that refers shock to a profound modification in the

structure even of the nerve cells—allied to that which occurs in exhaustion, but much more marked—seems to me to be far more satisfactory.

That the concentrated wretchedness that the subject experiences is not realized by surgeons generally is the only explanation I can give as to why they are not more deeply concerned about the matter. If they felt as I do, this subject would be set down for discussion at the very next medical or surgical congress. On no subject connected with medicine do I feel so strongly, for I can give no description of my sufferings under shock that would be at all adequate. There was no physiologist, pathologist, or surgeon near to help me in any way. My own regular nurse, an admirable surgeon's dresser, failed me miserably. Then came a good angel in the form of a young woman, a nurse in training, whom I had never seen till that day. Would that time permitted me to describe her and her mental ministrations. She seemed to slowly draw me out of a hopeless slough of awful misery by methods of human sympathetic appeal that perhaps only a woman has at command. Well, it was so, for men are hopeless as nurses, and in many other situations if they could only see it; but as a sex they have an exceedingly good opinion of themselves, and seem to think they are equal to anything and everything that can fall to any human being to do or to understand.

And here again a word about nurses. During the past year I have seen enough of about a hundred who were either graduate nurses or nurses in training to give me ground for some strong convictions. I would rule out at least three classes of women from this profession:

1. Those without the delicate mental touch termed tact. A tactless woman is a sort of monstrosity. I had some slight and unpleasant experience of one such nurse in Canada, and a bad two days of another in England, when the matron at my request replaced her by a very admirable substitute.

Those whose hands will never learn delicate handling. One such I could only put up with because she was so well disposed and looked so successfully to my comfort in small matters, which is so important when one has both big and little pains and miseries to endure. Quite a contrary experience was mine with a young nurse who during all the weeks she attended to me after my big operation never on a single occasion caused me the least pain. A wonderful hand had this little nurse, and it was associated with a fine brain.

3. The amorous nurse. She is more or less dangerous for patients, students, and young doctors. Like Liszt, to the charming young lady

who failed to please him in piano-playing, I would say: "Get married —get married quick—good-bye."

To my thinking, it would be better for themselves and for all concerned if many nurses in "homes," etc., in England were under less tension. On the other hand, I fear that many nurses in training in Canada do not take their profession seriously enough. They mingle thoughts of work and play too much together. I would not be doing justice to several of the London nurses who looked after me did I not bear witness not only to their professional efficiency and their sympathetic attention to every detail bearing on the comfort and welfare of the patient, but also their high degree of general culture, their refinement, and, what was a great matter for me, the beauty with which they spoke the English language. Some of them could give lessons in speaking to not a few of the London actors and actresses. But nowhere have I met a woman of more tact, better adapted to minister to the needs of the patient, and nowhere a nurse of more ability and general culture than two who were among my attendants in the Royal Victoria Hospital in this city. I again repeat that, in my opinion, the great problem is to attract the best type of woman to this noble profession by making it more and more honourable in the eyes of the public.

To do any sort of justice to the subjects of both psychological and practical interest to which attention has been called in passing would require a separate paper; but a word on a matter of a good deal of practical as well as of scientific interest—namely, hypnotic suggestion.

We are accustomed to invest with importance only that form of hypnosis brought about by some very special means that appeal to the eye. We are in these matters rather under the domination of the eye. As a matter of fact, everyone hypnotizes himself by suggestion many times daily. We do it unconsciously. Let me illustrate by a curious case of the latter kind. When taking an anæsthetic for the third time the expert said to me "Now breathe out. Never mind the breathing in; that will take care of itself." Not only did I follow his directions before I became unconscious, but I found that I was breathing in the manner indicated when I had regained consciousness. The effect of the suggestion had lasted through the whole period of unconsciousness and beyond it. We may all observe that we make suggestions to ourselves that, at a later period when we meant them to be active, cause an uneasiness that is followed by a recurrence of the suggestion. When the metal catheter was in the bladder I hypnotized myself so fully with the idea of lying still that the suggestion seemed to be active in sleep

even to a very complete degree. In such a case the value of such a personal hypnosis is obvious.

There is a peculiarity about the patient recovering from anæsthesia that is known, I imagine, to comparatively few—a sense of isolation and lonliness that may be quite foreign, as it was in my own case, to one's natural temperament. After an anæsthetic a patient is to some degree conscious sooner than might be supposed. I do not think a patient should ever be left alone on the supposition that he knows nothing or feels nothing. He feels very soon, and the sympathetic psychic touch of the nurse to whom he is accustomed—not a stranger—or that of an intimate friend, will prove a great comfort to him. After my prostatectomy, before I could speak other than with a thick tongue, I said "Nurse talk to me"; but she did it not and went on reading her book, for which I find it rather hard to forgive her, although she was a good surgeon's assistant.

You will by this time infer that my ideal surgeon is a man who, with all the general and special professional knowledge and skill of the day, illustrates, perhaps even more than the physician, that state of mind which results from contact with at least a little of every important department of culture; and who is possessed of that rarest and most valuable of all human gifts, the power to put one's self in another's place.

SURGERY.

UNDER THE CHARGE OF DRS. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

PROFESSOR W. KAUSCH. "The Treatment of Hydrocephalus in Infants." *Archiv. f. Klin. Chirurgie, Bd.* 87, *Heft.* 3., 1908; "The Treatment of Hydrocephalus by Repeated Punctures," by the same author, *Mitt. aus den Greuzgeb. d. Medizin und Chirurgie, Bd.* 21, *Heft.* 5, 1910.

The treatment of hydrocephalus dates back to the time of Hippocrates, who, so far as we know, first tapped the ventricles for it. The work of Leonard Hill in particular (1896) first gave us what was apparently a reasonable physiological foundation for the modern treatment of the disease by proving that the normal course of the cerebrospinal fluid after it leaves the ventricles, is into the longitudinal sinus, largely by way of the Pacchionian granulations, and so direct into the blood current. Of late years quite a number of articles have appeared with several new methods of treatment. The whole subject is reviewed more or less exhaustively in these two articles of Kausch, whose interest in the matter was awakened while he was first assistant to the late von Micku-

licz in Breslau. Professor Kausch, in his first article of 88 pages, reviews the entire literature, giving tabulated lists of the cases recorded, the nature of the operation employed, and the results. As a result of all this work he came to the conclusion that simple puncture, whether of the ventricles or, where possible, of the lumbar canal, if repeated frequently enough, gives definitely better results as to cure, with less danger to life, than any of the more complicated operations. In his second article, which has just appeared, he pursues this argument, and quotes in support of it two cases of his own that he had treated after this fashion since the appearance of his first article. The results in these two cases were, he claims, excellent in spite of the fact that both died, one from a complicating enteritis, and the second from too complete evacuation of the ventricles at the last puncture. The first case was a child of four and a half years old, in whom the hydrocephalus was ultimately demonstrated to be due to basal meningitis blocking the foramina around the fourth ventricle. There were performed 13 ventricular punctures in the space of 44 days, evactuating 3,035 ccm. in all. The size of the head, as demonstrated by photographs, was enormously reduced, and Kausch had reasonable grounds for the expectation that the process was coming to a stand-still.

The second case, a child of four months old, likewise following meningitis, had nine ventricular punctures done, evacuating 827 ccm. during the course of several months. Kausch's conviction is that the punctures must be repeated frequently, and where necessary large amounts drawn off. Unfortunately this led him ultimately into removing too large an amount under a negative pressure of 117 cm., a procedure which was followed in a few hours by death with convulsions.

While it can hardly be said that the figures of the author demonstrate conclusively his contention, it is nevertheless clear that the more complicated operations have been followed by enormous mortality. One may briefly refer, quoting from Kausch's two articles, to the various procedures which have in the last 15 years been proposed and carried out. Drainage of the lateral ventricles to the exterior, as recommended by Wernicke, in 1881, and carried out by Keen and others, is long since abandoned on account of mortality from too rapid exit of the fluid and from infection. The method records two cures and one improvement in the total number of cases reported. VonMickulicz, in 1893, was the first to conceive the idea of a permanent internal drainage of the lateral ventricles either into the subdural or into the subcutaneous space. Practically, he performed only the latter operation; and he devised a small gold tube, one end of which lay inside the ventricle and the other in the

subcutaneous tissue. He operated on seven cases by this method; all died, although one lived for seven months, with temporary improvement. Sutherland and Cheyne were the first, in 1898, to carry into practice drainage from the ventricle to the subdural space, basing their operation upon the work of Leonard Hill, in the expectation that the fluid would be carried off by the longitudinal sinus. Kausch reckons that of 18 cases operated on by this method there have been no cures, although improvement was noted in several.

It may be mentioned in passing that at the Royal Victoria Hospital there have been treated five cases by this method in the last ten years, of which four have died soon after the operation, while one, a patient of Dr. Garrow, is living at the age of three years, although mental development is apparently not proceeding.

The subcutaneous drainage of the lumbar canal proposed by Quincke has given only one cure, a patient of Kausch's complicated by a spina bifida. Kausch fashioned out of the spina bifida sac a tube leading from the lumbar canal to the subcutaneous space and the drainage proved permanent and successful.

Another method, first devised by Ferguson, 1898, was that of drainage from the lumbar canal to the peritoneal space. Kausch modified this idea by carrying a tube from the ventricle under the skin of the neck and thorax, through the rectus at the costal border, and so into the peritoneum. The method has no successes to its credit, but a modification by Harvey Cushing is mentioned in the third volume of Keen's Surgery as having given "a considerable measure of success." This modification consists in doing a laparotomy, trephining through one of the lumbar vertebræ, fitting into the hole thus made one half of a specially prepared tube (somewhat like the Murphy button), then doing a laminectomy and shoving in the other half of the instrument which locks with the first. This is presumed to afford permanent drainage from the lumbar canal to the retroperitoneal space. Cushing has not yet published particulars.

The recent advances in vascular surgery based upon the work of Payr and Carrel have led to two very ingenious methods of operation, which are still, however, rather unfavourable in their results. Payr, in 1908, proposed to intercalate a portion of the saphenous vein (taken from the parent) between the ventricular cavity and the longitudinal sinus directly. His most recent article reports three cases treated in this way, one of which died in three months after improvement, a second died in two hours, and a third died in 16 days. McClure, of Johns Hopkins, working under Cushing's guidance, devised a method of unit-

ing the subdural space with the external jugular vein by means of a portion of the saphenous vein taken from one of the parents. The end of the vein is anchored inside the dura but not within the ventricle, it being taken for granted that the fluid can find its way from the ventricle to the cortex. The other end of the vein is brought under the neck muscles and united to the proximal end of the cut external jugular by the Carrel method. While this operation succeeded in 50 per cent. of the animals used for experiment in the sense that the vein remained patent, the child upon whom the operation was performed died in a few hours. There is but the one case report of this as yet to hand.

All these methods assume that the only cure for the condition lies in the drainage of the fluid secreted. Ballance has proposed to attack the problem from another side, upon the theory that the condition is one of over-secretion chiefly, and only secondarily lack of absorption. He advises ligature of the two internal carotids leaving an interval, and reports two cases, of which one was cured, while the other died from infection. The conclusion of the whole matter, to judge from Kausch's long article, seems to be still, as before, a pessimistic one. *Prognosis infausta!* In looking over Kausch's reports and his references it would appear that some hope may be expected from frequently repeated punctures, but rather in cases which result from an overcome meningitis than in those of the idiopathic or congenital type, in which the communication between the ventricles and the spinal canal is free. These continue to baffle internist and surgeon alike.

E. A.

Society Proceedings.

THE MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The twelfth regular meeting of the Society was held Friday evening, March 18th, 1910, Dr. W. Grant Stewart, President, in the Chair.

PATHOLOGICAL SPECIMENS.

S. B. Wolbach, M.D. The first specimens are organs from a case of syphilis with cirrhosis of the liver associated with tuberculous peritonitis. The clinical history was that of cirrhosis of the liver with ascites. At autopsy the clinical diagnosis was confirmed and in addition there were typical tertiary syphilitic lesions of the skull. Another interesting finding was an anomaly of the aortic valve of the heart which has but two segments. These specimens have been preserved in

Kaiserling. The spleen shows chronic passive congestion which goes with cirrhosis of the liver.

The second specimen is one of considerable interest in that the clinical history simulated abscess of the liver; at least there was rapid enlargement of the liver with irregular high temperatures. At autopsy the liver was found riddled with tumour masses which were so necrotic that it was a question whether it was tumour or abscesses. The possibility was considered of this being primary carcinoma of the liver. Later on a very small carcinoma of the stomach was found, a little larger than a 50 cent piece and not much thicker, and without ulceration or peritoneal involvement. Histologically it is of the scirrhous type. It is the second case of very extensive metastases from a very small carcinoma of the stomach I have seen.

The next specimen is that of multiple herniæ of the substance of the brain into the arachnoidal villi. This condition is almost constant with increased intracranial pressure, that is, small herniæ take place into the Paccionian granulations and into the small arachnoidal villi, are found at the base of the skull in relation to the sinuses and veins of the dura. When working on the subject I called attention to the existence of sinus thrombosis due to these herniæ. In this preparation there is a yellowish mass of softened brain tissue which projects into the left lateral sinus and distal, to that is a thrombosis which has completely occluded the sinus. The cause of the intracranial pressure in this case was purely a local one, that is, softening of the brain on the inferior surface of the occipital lobe on the left side. This softened area lay directly over the sinus at the point of entrance of one of the cerebral veins, and as I showed at one time there are arachnoidal villi in this region that project into the sinus.

The next specimen is simply a case of massive softening of the brain. The basal ganglia on the right side are completely softened due to thrombosis of one of the larger cerebral arteries. The two specimens here are from the same case of epidemic cerebro-spinal meningitis, which occurred about a week or so ago in the hospital. The case is interesting in that it was treated with Flexner's serum, and although the meningococci persisted in the spinal fluid up to the time of death, at autopsy we found very little exudate. There was the merest trace of exudate on the brain, one small fleck of fibrin on the right side and a very small amount at the base of the brain. On the cord the exudate was localized at the place from which I have removed the segment. The cause of death was thrombosis of the superior right lateral sinus which was occluded as far as the jugular foramen, and for some dis-

tance beyond. The specimen shows the dura with the thrombosed sinuses.

Another specimen is the cord from a case of tuberculous meningitis; the brain after preservation showed the condition so poorly that I do not present it here; the spinal cord shows quite well the appearance due to tuberculosis.

We have here the vertebral column from another case of tuberculous meningitis; this shows the cervical part of a pre-vertebral abscess. The brain and spinal cord is not shown in this case. The 1st, 2nd, and 3rd vertebræ are caseous.

Another specimen here is a typical case of atrophic cirrhosis of the liver—the hobnail liver.

This specimen is one of prostatic hypertrophy with very marked hypertrophy of the bladder with very many diverticulæ. As you will see the enlargement which caused the obstruction is mostly of the so-called middle lobe; there is also an ascending infection with double pyelonephrosis.

The last specimen is a spleen from Dr. Armstrong's case of Banti's disease.

C. P. Howard, M.D. The case of carcinoma of the stomach referred to by Dr. Wolbach is one of great clinical interest. The patient was a young woman who had been ailing for about three weeks with general malaise, slight irregular fever, and pain and tenderness in the gall bladder region. After admission to Dr. Molson's service in the Montreal General Hospital her condition became much worse, there was high irregular fever, and severe pain referred to the right hypochondrium, where there was a large, palpable and visible mass present. A provisional diagnosis of subdiaphragmatic abscess was made, and an aspirating needle was inserted into the mass but no pus obtained. There were no gastric symptoms.

An exploratory laparotomy performed by Dr. Hutchison three or four days after admission, revealed an enormously enlarged liver but no abscess. The patient rapidly succumbed. Post mortem examination revealed the fact that the liver enlargement was due to a carcinoma which was at first thought to be primary in the liver, as no evidence of carcinoma had been noted in the stomach. However, a subsequent, more thorough examination of the stomach revealed a very small carcinoma of the stomach, which had been on first examination entirely overlooked.

This case teaches several lessons. First, the acute, rapid course which carinoma ventriculi may run: in this case the duration of the illness

was not more than six weeks. Secondly, the possible occurrence of high fever and chills as pointed out by Osler. Thirdly, the extensive metastases which may occur in the liver from a very insignificant primary gastric growth. The latter may be overlooked by the pathologist.

Geo. E. Armstrong, M.D. The spleen from the case of Banti's disease was removed from a young man of 38 who was referred to me by Dr. Lafleur. The clinical history is rather brief. He was in the West, and not feeling well consulted a physician there who located some apical lesion. He then came East to Dr. Lafleur who, in making a systematic examination, discovered this very large spleen accompanied by enlargement of the liver, the lower border of which lay about 2 inches below the ribs. There was some fluid in the abdomen, and anæmia—a typical picture of what is known as Banti's disease, described by the Florentine pathologist about 1882. The patient was kept under treatment for some time. When he first arrived the red cells were 3,800,000, whites between five and six thousand. With rest and treatment the anæmia increased and the spleen continued to enlarge, the reds were now 3,100,000, whites 4,000 and hæmoglobin 55 per cent. A second count two days later gave the reds as under 3,000,000, whites 4,000 and hæmoglobin between 55 and 56 per cent. The spleen extended seven inches to the right of the navel and below seemed to rest against Poupart's ligament and fill the left loin. There did not seem to be any doubt as to the diagnosis. The liver was enlarged, there was fluid in the abdomen, anæmia was present with this huge spleen. The diagnosis was one of spleno-megaly with cirrhosis or Banti's disease, and the only treatment which offered any promise of relief was removal of the spleen. This I did about 10 or 12 days ago. The adhesions were not numerous nor dense and the spleen was removed with a very small loss of blood, and the man is making a very good recovery. After removal and about 500 grammes of blood had been allowed to escape it still weighed 4,050 grammes. About 60 cases have been collected. Dr. Ben Johnson, of Richmond, Virginia, has reported 62 cases with a mortality of 19½ per cent. This mortality, probably, overstated the safety of the operation, no one man has removed a sufficient number to acquire very much experience with this operation. This is the second spleen that I have removed for Banti's disease. The first one I reported before the Society four years ago. That spleen was not as large as the present, weighing about 1,000 grammes, though the operation was much more difficult on account of the dense adhesions and the enormously distended veins which I had to deal with. In that patient there was the enlarged spleen, the liver was more cirrhotic and contracted than in the present

case, there was a certain amount of fluid in the abdomen and an icteroid hue which is not noticeable in this patient. Removal of the spleen seems to be followed by a very permanent recovery in these cases. In my first case, now four years ago last January, the patient is now in perfect health. He is a man who has a great deal of responsibility and has worked pretty hard since, but he says he is quite well, engages in out door sports and seems to be in perfect health. In the present case there has been no perceptible enlargement of the lymphatic glands, no aching in the bones indicating any special connexion of the bone marrow with this organ. The blood count early after the operation showed an increase in the red cells.

S. B. Wolbach, M.D. The spleen from Dr. Armstrong's case is one of great interest, because it is unlike any other case I can find in the literature.

There are two types of spleno-megaly with anæmia in the adult. One is Branti's type, in which the spleen shows marked fibrosis, the other is the family type or Gamber's type, in which the spleen contains enormous numbers of endothelial cells. Some cases of Gaucher's splenomegaly have been reported as endothelioma of the spleen.

In Dr. Armstrong's case the spleen is a blood forming organ. The extreme size (over 4,000 grammes) is due to the myeloid transformation. The specimen was studied by means of smears made immediately after operation and by sections. In the smears the various stages of red cell formation can be followed with greater ease than in the average preparations of active bone marrow. In the sections the appearance is that of very active bone marrow. Special stains for connective tissue show that there is very little if any increase in connective tissue. This specimen also contains great numbers of megakaryocytes.

The only other other mention of the spleen as a possible blood forming organ in Branti's disease is in Wartbin's paper. He describes the finding of nucleated red cells and giant cells of the bone marrow type, but states that he could find no evidence of red cell formation. He regarded the giant cells and nucleated r ds as metastatic from the bone marrow.

Dr. Armstrong's case, I believe, is unique. The history of the patient is to be followed with the greatest interest.

A. E. Garrow, M.D. Willie Meyer two years ago removed a very large spleen with very numerous firm adhesions, particularly to the diaphragm, so much so that although he made a very large incision, from the costal margin almost to Poupart's ligament, he was unable to separate the spleen from the diaphragm and from the numerous

adhesions with the stomach until he had done a subcutaneous resection of the lower three ribs, the 10th, 9th and 8th. He dissected these, and well behind it was remarkable the ease with which the upper splenic pole could be felt. In spite of the rapidity, however, with which this operation was done and the comparatively small loss of blood which ensued, this patient died on the table. The man was aged about 63, and was in poor shape for the operation though he had been under observation in the medical wards for some weeks.

E. W. Archibald, M.D. One point which interests me is the finding of very numerous nucleated red cells in this spleen, which Dr. Wolbach judges to be in its hypertrophy, essentially a blood forming organ still. If I understand him rightly, the hypertrophy of the spleen in this case may be due to an increase in this blood forming function. I am reminded of a case of mine, an instance of traumatic rupture of the spleen. It was a woman of middle age, who fell on a pile of stones, striking her left side, became collapsed in a few hours, recovered slightly from the collapse during the night; on the following day came to hospital in a state of profound anæmia, and was operated on on third day because of the onset of fever. I did not excise the spleen nor suture it in this case as bleeding had stopped; I merely exposed it, and finding this, and that it was covered by a few clots, I packed the neighbourhood. Fluid developed in the pleura, however, and fever persisted for two weeks, so that I then put in a needle, and withdrew a large quantity of blood-tinged fluid from the pleural cavity. Smears from that fluid showed large numbers of nucleated red cells; and the only conclusion at which I could come was that the accident had, at the same time that it caused rupture of the spleen, also caused a rent in the diaphragm, and that the effused blood found its way directly into the pleural cavity, and there lay unabsorbed. Under this supposition, the spleen does represent one of the factories for the making of red blood cells, a point still much in dispute. I do not think that there can be any mistake that these were nucleated reds, as they were verified by Drs. Klotz and Bruère at the time.

S. B. Wolbach, M.D. In the normal state we do not find nucleated reds, that is, stained smears from the spleen do not show nucleated reds, although in the severe anæmias of infants the spleen takes up that function, and the spleen in certain animals always remains a red blood forming organ, that is, erythroblastic, and I think that Dr. Archibald's finding has even more significance than he has attributed to it.

E. W. Archibald, M.D. I was attributing the nucleated reds in this case to the severe anæmia; the woman had lost a large amount of blood,

and I was assuming that the spleen, as in other severe anæmias from disease, was undertaking the reparative process necessary, and that in that process the nucleated reds were formed. How does Dr. Wolbach explain the presence of the nucleated red cells in the case of Banti's disease?

S. B. Wolbach, M.D. In Dr. Archibald's case might not a fracture of the rib, with a discharge of bone marrow into the pleural cavity, account for the presence of nucleated red cells.

E. W. Archibald, M.D. Dr. Wolbach's supposition of a fracture of the rib with escape of bone marrow is, I confess, a plausible one; and although no skiagram was taken of my patient which would have proved definitely the absence or presence of a fractured rib, there were, nevertheless, none of the clinical signs of such a lesion. Her symptoms were all abdominal.

TWO CASES OF APPENDICES PERFORATED BY PINS.

George Shanks, M.D. I am indebted to Dr. Armstrong for permission to show these two specimens. The first case was that of a young man, aged 21 years, who had symptoms pointing to appendix trouble extending over one and a half months. At operation his appendix was found not acutely inflamed, but on removal and section contained a pin. The second case was that of a lad of 15 years, no history of previous attacks. Three days before admission he was seized with severe pain in lower abdomen. On opening the abdominal cavity free purulent fluid was found and the appendix was perforated by a pin. Both of these patients remember having swallowed pins, the first patient about two and a half months, the second about one and a half months previous to admission.

THE EFFECT OF COLD ON THE BODY.

J. G. Adami, M.D., and W. H. Tytler, M.D.

Dr. Tytler read this paper.

The thirteenth regular meeting of the Society was held Friday evening, April 1st, 1910, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES.

A. C. P. Howard, M.D. The two cases which I wish to present to-night occurred in the Children's Clinic of the Montreal General Hospital. The first is a case of microcephalic idiocy. The child is nine months of age, the family history is negative, the antecedents, as far as known, being perfectly healthy. The parents are Hebrews of Russian extrac-

tion, and no blood relation exists between them. The child is the first born; the pregnancy perfectly normal though the labour was rather prolonged. The mother noticed that the head had the peculiar configuration, as is seen at the present time, and that all the sutures were prominent and ossified and that both fontanelles were closed. The child never cried at birth nor subsequently. For the first six months as it did not nurse well, the breast pump was used and the child fed with a spoon. While it developed in weight and size it never showed even the slightest intelligence. It would follow a light with its eyes; it was rather nervous, being easily started by the shutting of a door or any sudden noise. No teeth have appeared, and it has always lain in an apathetic attitude. Spasm of the limbs and of the head was noticed early and from the first month of life the child lay with its head thrown back. At three months of age the child was first brought to the clinic and a diagnosis of tetany was made. At nine months of age the child returned and it was now noted that it was under weight and undersized. The circumference of the head is only 35 cem., the sutures stand out prominently, both fontanelles are completely closed. The forehead is exceedingly low, small and poorly developed. The eyes are directed upwards into the orbit. There is pronounced weakness of the trunk and head; all the limbs are in extreme spasm resembling the cerebral palsy of infancy, i.e., with the forearm flexed on the arm, and the hand at the wrist, while the legs are in a similar position though not to such a marked degree; all the reflexes are increased and the child is apparently blind. Dr. Mathewson examined the fundi and reported that they showed only a slight degree of optic atrophy and no characteristic change of the amaurotic type of idiocy which was the condition at first suspected. This case seems to be one of micro-cephaly: it has all the characteristic marks. It is not a common condition. It is of congenital origin; probably the primary factor, at least in the true microcephaly, is the lack of development of the brain; in the pseudo- it is probably due to severe intrauterine disease. Early ossification of the skull and its consequent small size is a secondary factor. Gradually there develops this paralysis and spastic diplegia. The prognosis is bad: as a rule as in other forms of idiocy, they acquire some intercurrent infection and succumb early, though some live to 40 or 50 years of age. It used to be thought that an early operation on the skull by removing fragments of bone in various places would relieve the condition; this, however, did not prove successful as it was pointed out that the primary condition was not in the skull but in the brain.

The second case is one of true amaurotic family idiocy, and here the

diagnosis was suspected by us and confirmed by Dr. Mathewson. This history is somewhat similar to the first case. The child is 18 months old; the family history is negative, except that there is a very marked tuberculous history on the father's side; there are a great many brothers and sisters of both husband and wife as well as nephews and nieces, but none are similarly affected. The woman is also a Russian Hebrew, and this is her second child; the first is now 2½ years of age and is perfectly normal. The second pregnancy was normal except that the mother nursed the first child for the first four months. The child was born at full term and was nursed for twelve months. For the first three or four months it seemed perfectly normal and gained in weight and apparently was a bright, healthy baby. At this time, however, it took some infantile complaint and from that time the mother dates the beginning of its present illness. She noticed that the limbs grew quite flaccid and loose and that the child which formerly could sit up, gradually refused to do so or if propped up would immediately fall over again. This condition has gone from bad to worse until now, though eighteen months of age, it is helpless. On first looking at this child one is struck at once with the different picture. It is slightly under weight, the head is not larger than normal, the anterior fontanelle is just open; it has four teeth but cannot talk; there is a considerable flaccid paralysis of all the extremities and especially of the head, the child has to be propped up although one and a half years of age. It is rather peevish at times but for the most part lies quietly, and only when disturbed does it evidence any irritation; it is apparently blind although not completely. Its hearing is extremely sensitive and any sharp and sudden noise will make the child start violently. The examination of the eye grounds in this case clinched the diagnosis, and my thanks are due to Dr. Mathewson for his report. Dr. MacCordick kindly drew a sketch of the eye grounds, which is a typical picture of amaurotic idiocy. The optic disc shows no atrophy as yet.

Warren Tay first described the eye changes in 1881, and subsequently, in 1886, Bernard Sachs reported the symptom complex of amaurotic idiocy; it has certain special characteristics. In the first place it is a family disease; it is also almost peculiar to the Hebrew race; out of 68 cases reported 61 were in Hebrews. As fas as I can find only one case is reported in an American child. Tuberculosis and lues play no role; what does seem to play a prominent part is blood relationship in the parents. A lot of work has been done on the pathology of the disease. It is a most widespread disease of the pyramidal cells of the entire central system, both in the cerebrum and cerebellum, the medulla, pons

and spinal cord. These changes are first of all a swelling of the pyramidal cells, then an eccentric position of the nucleus; the Nissl bodies disappear; there is a secondary change of course in the nerve fibrils but no primary change; there results complete destruction of the nerve cells. The nucleus may entirely disappear and one sees nothing but a swollen protoplasmic mass. It is of interest to note that recently in addition to the infantile type, eight or ten cases of children of more advanced years have been reported. The pathological process is identical in the two types, but the juvenile type has occurred more frequently in non Hebraic races.

A. C. P. Howard, M.D. The occurrence of this cherry red disc is explained by the fact that in the retina there is the same change as in the central nervous system, viz., a swelling and subsequent atrophy of the nerve cells of the ganglionic layer. In the macular region the choroidal vessels shine through the atrophied retina especially well, whereas in the surrounding region there is a fibrosis and thickening which, of course, cuts off the light and gives the general white appearance.

W. F. Hamilton, M.D. I would like to ask Dr. Tytler concerning the first specimen, the combined biliary cirrhosis with adeno-carcinoma of the gall bladder, what relation did he consider existed between those two conditions, if any.

E. W. Archibald, M.D. The case of strangulated undescended testicle was that of a man, 31 years of age, who was sent into the hospital by Dr. J. J. Ross in the evening. The provisional diagnosis was appendicitis, and we operated for this condition. A certain lack of thoroughness in routine examination must be admitted, in the sense that we did not before operation examine the scrotum to see whether both testicles were present or not. There was no rise of temperature nor of pulse by the next morning, but in the afternoon he developed fever, and it was decided to operate. Exploration was undertaken with the idea that it was a case of ordinary appendicitis with the appendix lying low over the brim of the pelvis, thus accounting for the unusual situation of the pain which was hypogastric and chiefly on the right side. As soon as the incision was made the mass shown you to-night presented itself, and of course it was recognized at once. If we had carried out the proper routine examination of the whole body, we could not have failed to discover the absence of one of the testicles from the scrotum, whereupon the correct diagnosis might have been formulated with some degree of likelihood, if not with certainty.

J. Alex. Hutchison, M.D. I would like to ask if there was any

vomiting. I had a case of this once and a pronounced symptom was vomiting, and this vomiting was thought at first to be due to some intestinal obstruction. I found the absence of the testicle, however, and the diagnosis was plain.

E. W. Archibald, M.D. There was vomiting, but only on two occasions, first in the morning about 10 a.m. when the pain started and again in the afternoon; he was operated on 24 hours later.

THE INFLAMMATORY "PELVIC MASS."

W. W. Chipman, M.D., read the paper of the evening.

F. A. L. Lockhart, M.D. I am sure we have all thoroughly enjoyed this paper which Dr. Chipman has given us; it is not only a scientific paper but one which is full of good practical points which I think can be followed by any of us. I think that his description of the genital canal by calling it a bifid cylinder is extremely apt. Some years ago a series of experiments were carried out where different varieties of pigment were introduced into the vagina and were subsequently found at operation in the cavities of the Fallopian tubes, thus showing that there must have been a current of some sort proceeding from the external to the internal genitals, and undoubtedly this is the source of infection in a great many of our cases of inflammatory pelvic mass. There is one class of case of interest, and that is where the patient is profoundly ill for quite a while, the condition improving under rest in bed and proper local treatment, but there still persists a mass connected with the uterus, and where it is difficult to make out whether it is the Fallopian tube or the ovary or an entirely independent inflammatory mass. The mass is one which is formed by an inflamed omentum. I have had several such cases where it was difficult to make out the mass but, after seeing three or four, one can diagnose it with a fair degree of accuracy. The boundaries of the mass are extremely well localized; it, of course, is absolutely immobile and is apparently almost subcutaneous. The comparative rarity of these inflammatory cases in private to what one gets in one's public practice is notable; I suppose the hygienic and general surroundings of such patients have something to do with the figures. My own experience is that the bacillus coli is quite a frequent invader of the pelvis. That, of course, is usually seen where there is some connexion between the mass and some part of the alimentary tracts, especially the rectum, and gives rise to an especially purulent form of infection, one which can be treated by local measures, but which goes to operation sooner or later. You can usually tell the nature of the case by the character of the pus which pours out when the tube is opened. Another point is that Dr. Chipman states

that the streptococcic mass feels like plaster of Paris poured out into the pelvis. In the acute stage, you will not get the margins of the mass so clearly defined because there is extension of induration from the tube itself to the surrounding structures, but you take a subacute or chronic case and the margins are most clearly defined. That has been my experience, and in quite a large proportion of cases of pelvic inflammatory mass the boundaries of the mass are quite clearly defined. I think we must congratulate Dr. Chipman upon the results of his treatment in those cases. As one gets older one operates less. Of course, in our first years we want as many operations as we can get; we are alarmed at the patient's condition and we rush in and operate, and are then astonished at the mortality. The routine treatment carried out in my ward is as follows: When an acute pelvic inflammatory case comes in, the patient is put to bed, kept absolutely at rest, is given hot antiseptic douches, and cold is applied to the abdomen, and it is wonderful what a large proportion of these cases will clear up. As regards the permanent cure of some of these cases; I have one patient who had a large inflammatory mass, very chronic and she had been sterile for fourteen years. She was given hot douches, the application of iodine and the use of tampons and electricity, and in twelve months she was apparently well, and in twelve months more gave birth to a full term child. To Dr. Chipman's list of those who have done a great deal of interesting work in connexion with the bacteriology of the pelvis, I would like to add one more name, especially as it is that of a man in whom we are largely interested, and that is Dr. Fraser Gurd. Dr. Gurd went into the pathological department of the hospital and did a great deal of serious work on this subject, two of his papers are considered quite standard monographs on this subject.

A. Lapthorn Smith, M.D. There are a few points on which I would like to lay a little more stress. I was very glad to hear Dr. Chipman say that the genital tract was a bifurcated tube. Many speak of it as though there were two tubes and that you can have one of them infected with gonorrhœa and the other quite healthy. But I hope the day is not far off when it will be understood that you cannot have an infection of one tube without an infection of the other. And here comes up the question of conservative gynecology so called, but where a second operation has to be performed because the first operation only removed one side when both sides were infected. Thirty times, at least, I have had to do a second laparotomy on my own or on some other operator's patients because only half of the work was done the first time.

Dr. Chipman has called attention to another interesting point which

I have not heard mentioned before; namely, that tubercular disease of the tubes always begins from above while gonorrhœa always begins from below. I have often heard it stated that tubercular disease sometimes begins from below and works its way up, but I am inclined to think that Dr. Chipman is right in saying that it always follows tubercular infection higher up, such as tubercular gland, which has ruptured and poured its contents into the peritoneal cavity, the bacilli then gravitating towards the tubes.

I have a very clear conception of the process by which the pelvic mass is formed. The gonococci spread up the vagina, uterus and into the two tubes. If it is a bad case the mucous membrane at the uterine end of the tubes is destroyed and replaced by a cicatrix which contracts and forms a tight stricture just as it does in the male urethra. The pus which has so far been escaping hitherto can no longer get out through the uterine end and therefore flows towards the fimbriated extremity. As it would mean death to have the whole peritoneal cavity infected, nature pours out lymph to seal the tube, and thus a tubal abscess is formed. This abscess would break into the peritoneal cavity as I have seen it do once, but as a rule before it has time to do this the policeman of the peritoneal cavity, the omentum, surrounds it and coils of intestine become adherent to it at the weak place so that it is walled off. In time, the exuded lymph becomes organized into fibrous tissue and most of the pus is absorbed. What remain forms the pelvic mass. On opening the abdomen to remove it the first thing to do is to detach the omentum and the coils of intestine. Although it is not good to operate on these cases during the acute stage it is just as bad to wait too long. I have seen these tubal abscess in one case break into the rectum, bladder, vagina and through the abdominal wall. As she had a very high temperature and almost no pulse I declined to operate on her and she died a few days later. When I hear that Dr. Chipman only loses one and a half per cent. of these cases I know that he has learned to be very cautious, as I am now. But it was not so twenty years ago. At that time we were afraid to wait until the acute stage was over, and consequently we had a much higher death rate. By waiting three or four weeks in most cases the cocci will have given off enough ptomaines to kill themselves by their own excretion and then the pus becomes quite harmless.

I would like to point out one source of error and a very common one, namely, when a patient has been kept in bed on a milk diet and been given a good deal of morphine for pain, her rectum and sigmoid becomes packed with fæces which form a mass in the pelvis which

the family doctor has mistaken for a pelvic mass. But the finger sinks into it and forms an impression, and a dose of castor oil will bring away several chambers full and the mass will disappear.

Dr. Chipman has spoken of this pelvic mass being mistaken for a solid tumour. I had such a case, a patient sent to me by Dr. Aubry, whose condition had been diagnosed in New York, and at Burlington, as a large fibroid tumour. Before operating I thought it was so too, but on opening the abdomen I found that this large mass was made up of two pus tubes, two large cystic ovaries and a little uterus packed away in the centre of it, all glued together.

When I operate on a bad case of pelvic mass alias pus tubes, after removing the tubes and ovaries I pull the omentum down and then pass a perforated rubber drainage tube through Douglas' cul de sac and out through the vagina, and sit the patient in the Fowler position. Several pints of pus and bloody fluid drain away which otherwise the peritoneum would have had to take care of.

H. M. Little, M.D. I would like to ask Dr. Chipman whether a gonorrhœal pelvic mass often occurs in the absence of pregnancy with resulting abortion or labour. For my part I have never seen such a case. At the Maternity we have had some 40 or 45 cases of florid gonorrhœa, but a pelvic mass has never resulted. Active treatment was carried out before the confinement and great care was taken during the confinement, and puerperium to make no internal examination and to avoid all local treatment which might cause infection to ascend into the uterus. Whether streptococci, or other pathogenic organisms are present in the vagina or not, it remains undisputed that, except under very exceptional circumstances, puerperal infection will not occur unless the patient is examined vaginally. In all operative cases particular care should be exercised about the cleansing of the vulva. It is unusual to see a patient die of puerperal infection when the vulva had been satisfactorily cleaned and the hands of the operator were above suspicion.

In making a diagnosis of the character of the infection present, one clinical point is of interest. If the temperature and pulse are charted on a basis, for example, of a temperature of 104 corresponding to a pulse of 140, of temperature 103, pulse 130, etc., it will be found in most of our local infections that immediately post partum the red line indicating the pulse, lies above the black line of the temperature, and that about the 5th or 6th day the two lines cross; when the infection is due to the streptococcus the red and black lines lie more or less together, and follow the same general course, while in the sapræmic form

of infection, the black temperature line usually lies high above the red line of the pulse.

A. L. C. GILDAY, M.D. As one of the younger members I am rather interested in the question of interference in these cases and would like to ask Dr. Chipman as to what are the indications for such a procedure in these cases.

WESLEY MILLS, M.D. Before Dr. Chipman replies, Mr. President, I may voice one thing that we have all felt but which has not been definitely dwelt upon because those who have spoken on the subject have very naturally referred to the matter rather than the form of the paper. I would like to voice our thanks to Dr. Chipman for the form of the paper. I think that scientific and medical men are not, perhaps, sufficiently alive to the importance of observing what was more common in the past, that is, the literary form of what they write, and any one amongst us who does pay attention to that, and in this I would include also the artistic side of the delivery, will find us all appreciative and thankful, and I hope Dr. Chipman will feel this.

W. GRANT STEWART, M.D. I am sure we can congratulate Dr. Chipman on his excellent paper given to the Society to-night. We came with great expectations and we have not been disappointed. This large gathering before me is a compliment to the popular reader of the paper of the evening. It is a very valuable contribution to the literature. It represents a great deal of valuable work, and it contains the observations and conclusions of a scientific and accurate observer.

The paper has given rise to a most able discussion. Dr. Lockhart emphasizes one thing which the paper indicates, and that is the conservatism of modern gynæcological surgery. And the more the experience the greater the caution in undertaking gynæcological operations. We have all benefitted much from the paper and the interesting discussion, and we are deeply indebted to Dr. Chipman.

A NEW FORCEPS FOR THE REMOVAL OF THE ANTERIOR LENS CAPSULE.

F. T. TOOKE, M. D. The report of this instrument appears in this Number of the JOURNAL.

METALLIC POISONING.

W. F. HAMILTON, M.D. This case with one other will be published later.

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LEVULOSURIA, AND ITS SIGNIFICANCE IN THE DIAGNOSIS OF HEPATIC CONDITIONS.

BY

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The functions of the liver are numerous and the testing of them, clinically, is most complicated and difficult. Many special workers have "sought in vain," one might say, to discover satisfactory methods by which the cell activity of this organ might be determined. The correlation of the chemical findings with organic change is a task not less difficult and towards this most desirable result many investigators are energetically striving.

When one reflects seriously upon the results obtained by the routine methods applied, one must conclude that the ordinary clinical examination of the liver affords but little that is conclusive concerning that organ. The patient is jaundiced and the stools are acholic. These signs may well arise from several causes outside the liver; or again, the liver margins are felt or not felt, in many instances on account of surrounding conditions, or on account of displacement. There may be ascites. Hepatic causes may have no part in this; and so one might multiply instances illustrating the uncertainty of results in the ordinary examination made upon this organ.

More and more with the advances made in scientific medicine, it has not only become essential that the functions of the various organs be understood and determined, but it is becoming possible to do so. Among many function tests applied to the liver, those for the carbohydrate metabolism seem to be most satisfactory, and of these the levulose test stands out with most promise. It has the advantage of being easily applied, and while no test by itself is conclusive, yet, judged by the accumulating evidence regarding it, one may at least say that it is very helpful in answering the question concerning the functional activity of the liver cells.

The purpose of the observations made during the past two years in the wards of the Royal Victoria Hospital has been to work over a por-

tion of this field of difficult diagnosis already opened up, and thus to test the truth, or otherwise, of what has been done. The few notes which it is my privilege to present to this meeting to-day, are but a record of these observations and a comparison of the results of other workers.

Two statements should be made concerning the test in order to show the basis of its applications. In 1901, Hans Sachs published the results of his experiments showing that the liver alone was able to convert levulose into glycogen. Those animals with extirpated livers when given levulose, excreted it unchanged. Further, upon experimental grounds, Strauss and others consider that 100 grms. of levulose is readily dealt with by the majority of normal individuals, no trace of it being found in the urine afterwards. There is, however, according to these observers, a percentage of normal—or at all events apparently normal—individuals, varying from 1 to 15 per cent., in whom alimentary levulosuria occurs on taking 100 grms. on a fasting stomach.

We have here briefly summarized and grouped the cases studied:

GROUP I.

With History or Physical Signs Pointing to Hepatic Disease.

Case I.—No. 15,533.—Male, aged 16, Admitted for some signs of general gonorrhœal infection, pain over the plantar fascia and sacral region, pain in the left side of the abdomen and down the left leg. The liver one and a half fingers below the costal margin, spleen readily palpable, no jaundice. Levulose test positive, about ½ per cent.

Case II.—No. 15,413.—Female, aged 51. Jaundice, short illness of three months with severe abdominal pain in the upper half of the abdomen, no vomiting. Loss of weight in two years from 155 to 122 pounds, no history of alcohol or syphilis, bile and albumin in the urine. No fever or ascites. At first the liver was difficult of palpation; after two or three weeks in the hospital one felt that it was definitely made out and enlarged. The levulose test was positive, ½ per cent. being present.

Case III.—No. 15,416.—Male, aged 40. Pulmonary tuberculosis, myocarditis, jaundice, enlarged liver and spleen, occasional attacks of diarrhœa; œdema of the legs. The test was positive from the first.

Case IV.—No. 14,799.—Female, aged 58. Ill several months with attacks of diarrhœa; no pain or vomiting, no history of alcohol or syphilis. The liver and spleen were not enlarged; stomach was displaced. The test was positive in the second hour specimen.

Case V.—No. 14,227.—Male, aged 47. Complained of loss of appe-

tite, morning vomiting, abdominal pain, and had been ill for about one year with so-called digestive troubles; liver was enlarged and tender, the spleen was not palpable; the face was muddy. There was a history of alcohol; there was dulness in both flanks. The test was positive at the end of the first hour.

Case VI.—No 14,571.—Male, aged 40. Gastric disturbances for some time, abdominal distress, dulness in both flanks, slight jaundice, with bile in the urine; liver enlarged below the costal margin. The test was positive from the first hour.

Case VII.—No. 15,343.—Male aged 49. An indefinite history of tuberculosis many years ago. Recent illness of nine months with slight jaundice, indigestion, and fever. No alcoholic history, no syphilis. Abdomen distended and other signs of fluid. The test was positive in the first and second hours, 2½ per cent. of levulose in the second specimen.

The patient died some three or four weeks after the test was made, but no autopsy was performed.

Case VIII.—No. 15,161.—Male, aged 45. History of alcohol to excess for several years. When under treatment two years before the test was made, the liver was 2½ inches below the costal margin, tender and rather hard, patient was somewhat jaundiced. During this period the patient had been an abstainer and had complained of loss of appetite. There was often considerable epigastric distress, particularly three or four hours after food. The liver was felt just beneath the costal margin. The levulose test was positive in the second, third and fourth hours.

Case IX.—No. 15,242.—Female, aged 41. Diarrhœa was the chief symptom. The patient was a gin drinker for some two years or so and lost weight. There was no jaundice. The test was positive in the second hour, ½ per cent. of levulose being present.

The patient improved and no further observations have been made in the past three months.

Group II.

Cardiac Cases with Infections.

Case X.—No—.—Female, aged 48. General œdema, ascites, history of alcohol, considerable irregularity of the heart; no albumin in urine. Doubtless a case of myocarditis. Levulose test negative.

Case XI.—No. 15,406.—Male, aged 10. Streptococcus, septicæmia, blood culture positive; malignant endocarditis involving both mitral and aortic valves. Mitral stenosis and aortic insufficiency; fever; no albumin and no casts when the test was made. Spleen and liver both enlarged. Test negative.

Case XII.—No. 15,362.—Female, aged 28. Chronic mitral and tricuspid insufficiency. The liver enlarged and pulsating; slight icterus, ascites; no albumin when the test was made. Test negative.

Patient went home improved.

Case XIII.—No. 15,287.—Male, aged 54. Alcohol for many years. Aortic endocarditis, myocardial degeneration, passive congestion of the liver and spleen, the liver large and tender. Levulose test negative.

Case XIV.—No 15,221.—Male, aged 15. Chronic mitral and aortic disease, enlarged liver, ascites and hydrothorax, slightly jaundiced. The levulose test was positive in the second sample giving ½ per cent.

The autopsy showed a nutmeg liver and cardiac spleen.

Group III.

Jaundice and Malignant Disease.

Case XV.—No. 14,575.—Male, aged 19. For several months had sign of abdominal disease as shown by enlargement, tenderness, ascites and pain. Needed frequent tapping; a mass was discovered in the rectum. The test was aplied and proved to be positive first, second and third hours after ingestion.

Patient died. Extensive cancer of the colon with metastases in the liver, omentum, etc. The case is one of unusual character occurring in a youth of 19. Patient said that he was well until July, 1909—died on December 25th, 1909. No bile in the urine.

Case XVI.—No. 15,251.—Male, aged 39. Recent illness, severe abdominal pain; liver edge not felt, doubtful diagnosis. Test was negative. Operated on by Dr. Bell. Liver found normal; pancreas thickened and hard.

Case XVII.—No. 15,484.—Female, aged 11. Headache, nausea and abdominal pain beginning about ten years ago, succeeded by jaundice. The history given by the patient's mother shows that the child had always been ailing, complaining of abdominal cramps, headaches and nausea almost every week, necessitating her losing some time at school. There was deep jaundice; the liver was enlarged, and somewhat irregular. The test was positive in all four specimens examined; 75 grms. only of the levulose was given on account of age.

Case XVIII.—No. 16,990.—Female, aged 52. Protracted gastric disturbance, no jaundice. Cancer of the liver and gall bladder was diagnosed. At operation the diagnosis was established, there was certainly cancer of the gall bladder; the liver was enlarged. The test was positive.

Cas XIX.—No. 14,634.—Male, aged 64. A long period of indigestion and jaundice, with attacks of abdominal pain, more or less severe.

Intense jaundice. Loss of weight and considerable weakness. Abdominal signs were those of enlargement in the region of the liver, but there was no ascites. Stomach gave no free hydrochloric acid. The whole history suggested gall stones or malignancy and the decision was in favour of malignant disease. Test was negative.

The subsequent course of this case proved the incorrectness of the diagnosis at all events; it is highly probable, from the clearing up of the jaundice and increase in weight, that the patient suffered from gall stones.

Case XX.—No. 16,945.—Female, aged about 55. Some 15 or 20 years of gastric disturbance, the abdomen full and enlargement in the region of the gall bladder and liver; jaundice. The test was positive.

Group IV.

Miscellaneous.

Case XXI.—No. —.—Female, aged 35. History of several months of excesses in gin drinking inducing acute multiple neuritis; blue line on gums. Test negative.

Case XXII.—No. 14,992.—Male, aged 57. The patient had complained of "stomach trouble" for several years. There was no history of alcohol or syphilis; liver was not enlarged. The patient was the subject of tabes dorsalis. The levulose test was negative.

Case XXIII.—No. 15,433.—Female, aged 40. History of pleurisy and neuralgia; gin and whiskey drinking admitted. For several years her liver and spleen attracted, on account of their size, the attention of the physicians who examined her. The skin was muddy, there was no jaundice, no albuminuria; there was latent tuberculosis in both pulmonary apices. The test was negative.

Case XXIV.—No. 14,460.—Female, aged 54. Patient was admittel to the hospital as a case of diabetes. There was no history of alcohol; there had been several miscarriages. The patient complained of general pains in the back, abdomen and breast; some numbness in the fingers of the right hand; she had a big abdomen. The liver was not enlarged although there was slight ptosis. When admitted on the 6th of August, the percentage of sugar dextrose was $\frac{1}{5}$th per cent., and this increased on full diet to 5.6 per cent. Thereafter, there was a gradual lessening until August 19th; the test for dextrose was negative. During this time the patient had been dieted and given codein. After four days of sugar-free urine the levulose test was tried and proved positive in four specimens.

Case XXV.—No. 15,181.—Male, aged 75. This patient, while ad-

mitting that he used to drink alcohol steadily, made no complaints suggestive of hepatic disease. He was under treatment for sacro-lumbar pains and was given the test largely for the purpose of seeing how the liver of an old man would deal with 100 grms. of levulose. The test was negative.

Case XXVI.—No. 15,197.—Male, aged 19. This was a doubtful case of tuberculosis, with dilated heart and ascites. There was a question whether it was the omentum or liver which one felt in the upper part of the abdomen. The levulose test was negative.

Analysis of the Cases.

There were 26 patients in all subjected to the test, and in their analysis we have striven to group them together, mainly from the clinical diagnosis.

Our first group consists of 9 cases in which either the clinical history or the physical signs, and in some instances both, suggested definitely hepatic disease.

In the second group are to be found 5 cases where the patients were the subject of advanced cardiac disease, and by glancing over the summary of each case one may readily discover the gravity of the lesions.

The chief characteristics of those cases comprising the third group, 6 in number, are protracted jaundice, signs of malignant disease, and digestive disturbances.

Into our fourth group we have thrown together 6 cases, and termed them miscellaneous. We have thus applied the test in a variety of conditions comprising several diseases, certain toxic states, and senility.

In studying these cases a little more closely it will be observed that our first group of 9 presents an interesting study, the results of which confirm the conclusions already arising from this test,—that it was usually positive in cirrhosis cases. Of these 9 all gave the positive reaction. Six of these it would appear are pretty definite cases of cirrhosis of the liver, Nos. 3, 5, 6, 7, 8, and 9. From the reaction and from the physical finding it seems probable that cases Nos. 8 and 9 are cases of early cirrhosis. This statement is based upon the tests becoming positive only in the second hour, and upon the history and appearance and complaints of the patient. In cases No. 1, 2, and 4, we must admit that there is doubt,—considerable doubt—and from the result of the tests these cases might be classified as "hepatic insufficiency," which should be followed up.

The second group are all negative, with one exception, No. 14, which is of particular interest. This patient died from chronic endocarditis

and the results of the autopsy, so far as concerns our argument to-day, shows definitely an early fibrosis, as described by Dr. Adami. I cannot do better than quote his description. In his report upon the microscopic findings in this case Dr. Adami says:

"The sections exhibited a well-marked grade of passive congestion, with atrophy involving the central third of the lobules. The outer third showed very little fatty infiltration of the cells, hence this was not a typical 'nutmeg liver.' Some cells showed a fair number of small, rather shrunken looking, fat globules. There was more fatty infiltration in the cells of the middle zone bordering upon the areas of atrophy. In addition to congestion there was a marked fibrosis of the portal sheaths, with apparent multiplication of the bile ducts, showing in some places a small celled infiltration, but in general being of an older type with fully formed connective tissue. This fibrosis was sharply confined to the portal sheaths. One mass was so large as to take up more than two fields of the high power."

Of the third group, comprised of 6 cases, four show positive reactions. In two of these Nos. 18 and 20, there is malignant disease of the liver and gall bladder, the liver being doubtless involved secondarily. The third, No. 15, giving a positive reaction, also showed extensive metastases in the liver and omentum. To No. 17, a child of 11 years, 75 grams instead of 100 grams were given, and a positive reaction was obtained in the four hour specimens. The remaining two cases, Nos. 16 and 19, showed the liver to be manifestly normal at operation, and subsequently as judged by the course of the case.

The fourth group contains a number of cases, 6 in all, on which the test was tried, as in previous cases, for diagnosis, but little if any evidence being present in the history that we were dealing with hepatic disease. They comprise alcoholism with its resulting neuritis, a chronically enlarged liver and spleen of several years standing, tabes dorsalis, senility, alimentary glycosuria, and tuberculosis. These cases gave the negative reaction with the exception of No. 24, the case of alimentary glycosuria, and this we would classify as another of "hepatic insufficiency."

We have already said that the application of the test is simple. The urine of the patient is examined for sugar. In the morning after a night of fasting, and after emptying the bladder of the night urine, the patient is given 100 grams of levulose in about 500 cc. of water or weak tea, and the urine is then examined every hour until four specimens are taken. It is usual to apply three tests, and some prefer four, to determine the presence of levulose. They are, the Resorcin test, Schwanoff,

Fehling's test, or that of Safranin, and the polariscope. The fermentation test may also be applied.

Of the 26 cases which form the basis of this paper there were 15 positive and 11 negative results.

Positive: 6 Cirrhosis.
4 Cirrhosis probably (1 cirrhosis with jaundice in a child of 11 years.
1 Cirrhosis with heart disease.
2 Cancer of the gall bladder and liver.
1 Cancer of the liver, metastatic.
1 Alimentary glycosuria (hepatic insufficiency).
15

Negative: 4 Cardiac cases with passive congestion.
2 Jaundice with pancreatitis and gall stones.
1 Spleen and liver enlarged, chronic.
1 Tabes Dorsalis.
1 Alcoholism.
1 Tuberculosis.
1 Senility.
11

Results of observations already recorded up to November, 1909, as reported by Holweg, to which Goodman's figures are added:

	CASES.	POSITIVE.	NEGATIVE.
Liver cirrhosis	102	93	9
Jaundice with gall tones	3	2	1
Catarrhal jaundice	9	7	2
Luetic liver	16	11	5
Chronic obstruction of common duct	8	8	0
Passive liver congestion	23	1	22

Many more might be added, but they comprise for the most part a few observations on amyloid liver, malignant growths, both primary and secondary, affording rather conflicting results.

Our results accord pretty closely with these figures,—to take but two classes of cases:

	CASES.	POSITIVE.	NEGATIVE.
*Cirrhosis of the liver	6	6	0
Cirrhosis of the liver?	4?	4	0
Cirrhosis of the liver with heart disease	1	1	0

[* In view of the percentage of positive results in cirrhosis, it may be explained that the cases were all selected as such upon clinical evidence. —W. F. H.]

This is 100 per cent., but there are four cases which are doubtful; when these cases are excluded the percentage remains the same.

The percentage of negative results in passive congestion is also high, corresponding with those of other observers.

In closing, it would seem that the following observations might, at least partially, express the present status of the levulose test:

(1) The levulose test is positive in a high percentage (75-100) of cirrhosis cases.

(2) This test may be considered as determining the presence of cirrhotic processes in the liver where passive congestion is the chief clinical feature.

(3) It is suggested by this study, and that of others (Hohlweg), that the test should be more carefully considered in its relation to malignant disease associated with jaundice. It may be possible to distinguish the obstruction of gall stones from the obstruction due to malignant disease.

(4) This test—like all others of the kind (bio-chemical)—can be of use only when the whole case is considered.

(5) It is suggested that the term "hepatic insufficiency" might properly find a place in the columns of diagnosis when this test is positive.

My thanks are due to Dr. Bruere of the Clinical Laboratory, and to several house physicians, among whom Dr. Landry and Dr. Carney should be mentioned.

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REGENERATION OF SHAFT OF TIBIA FOLLOWING EXTENSIVE OSTEO-MYELITIS.

BY

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The following are brief notes taken from the hospital report of a somewhat unusual case of the regeneration of the shaft of the tibia: H. L., aged 12, was admitted to my service at the Montreal General Hospital on March 11, 1908, suffering from a large swelling in the

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front of the right leg, and a small swelling in the right wrist and forearm. Four weeks before admission, without any history of previous illness or injury, pain and swelling developed in these two regions. Family history shows mother and one sister died of tuberculosis, (one sister had "rheumatism" two years ago), and the father was suffering from tuberculosis at the time of admission.

Patient is a delicate, emaciated boy, suffering from grave constitutional disturbance. The following day under ether anæsthesia, a free longitudinal incision over the front of the leg was made, and a large quantity of pus was set free, when it was seen that the diaphysis was devoid of periosteum, virtually separated from both the upper and lower epiphyses and was removed. Involucrum was already present. After disinfection with pure carbolic acid and alcohol, the part was packed with iodoform gauze and limb placed in a plaster cast, leaving a fenestra over the wound.

The right wrist was opened, curetted, disinfected and packed with gauze. Culture showed staphylococcus pyogenes aureus.

Eleven days later, on March 23rd, under ether anæsthesia, the cavity was disinfected, the periosteum separated from subcutaneous tissue and brought together at a few points with catgut sutures, with a view to reproducing the original circular form of the periosteum. The periosteum was then filled with Mosetig-Moorhof's plumbage. The skin being brought together over the surface, provision was made for drainage by the introduction of iodoform gauze at the upper and lower margins, carried down to the epiphysis. The limb was put in a plaster cast supplemented with a weight and pulley extension apparatus, in the hope that this might aid in retaining the normal position of the limb during the process of repair, thus preventing curving due to the fibula continuing its longitudinal growth, as well as the lack after the removal of the sequestrum.

Drainage was kept up for many months, small particles of iodoform plumbage being washed out from time to time. Patient was discharged on August 12th in good condition with his limb in a plaster cast. There is slight antero-posterior movement in the middle of the shaft on the new growth. Later he returned when it was seen that complete regeneration of the bone had taken place, although the central portion was small. Sometime later, while at play, he fractured this point of the new bone and was readmitted to the hospital on December 5th, 1908.

On December 7th, under general anæsthesia I dissected out the ends which I found to be rounded, and after freshening the surface by sawing, brought the parts together with chromic-iodine catgut. It was noted

DIAGRAM No. I.—March, 1908. After operation, M.G.H.

Diagram No. II.—May 30, 1908.
X-ray No. 486. M.G.H.

Diagram No. III.—December 7, 1908.
X-ray No. 1408. M.G.H.

Diagram No. IV.—June 21, 1909.
X-ray No. 824. M.G.H.

Diagram No. V.—December 24, 1909.
X-ray No. 2069. M.G.H.

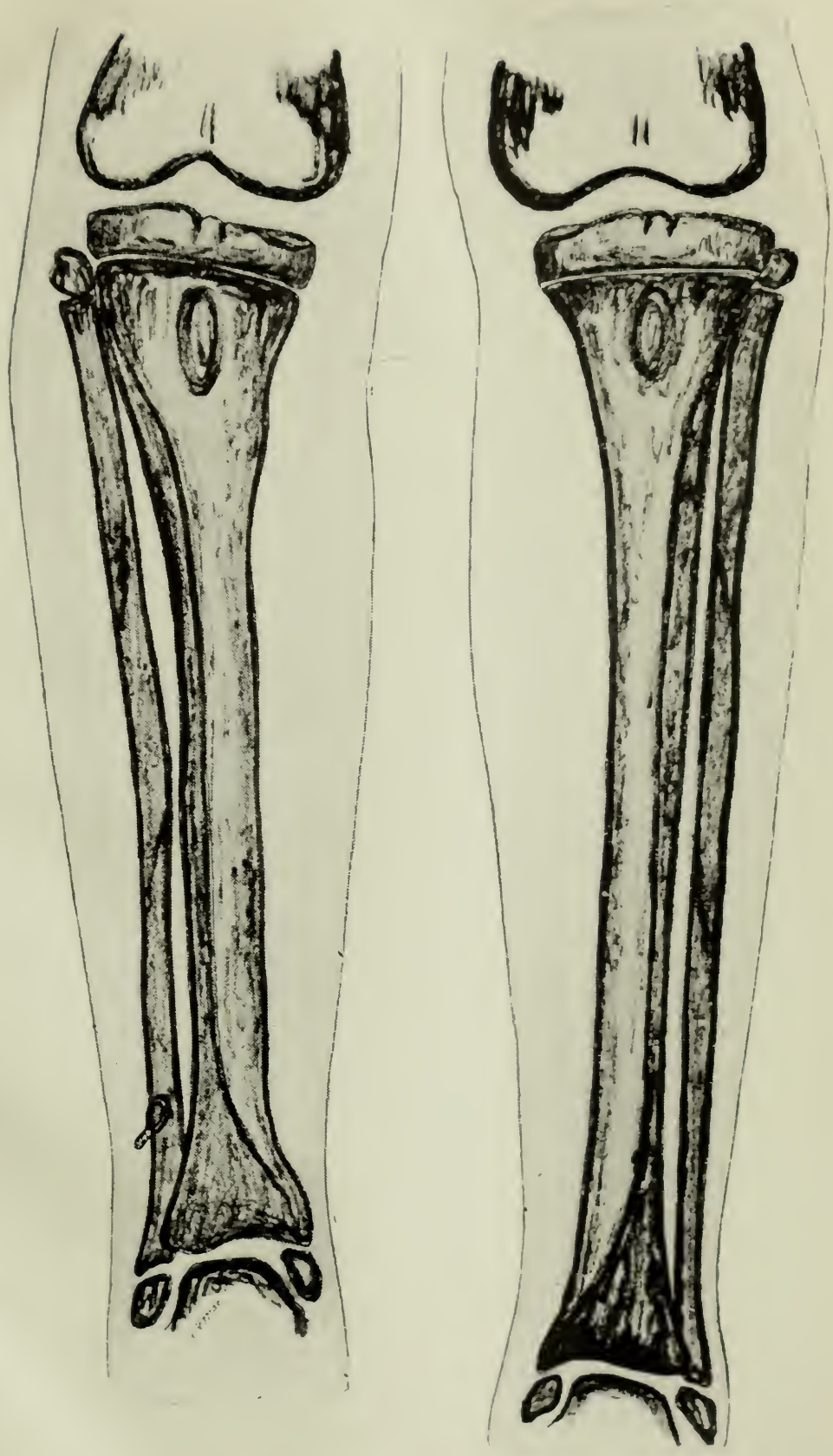

Diagram No. VI.—January 26, 1910. X-ray No. 217. M.G.H.

in sawing the bone that there was no medulla, and that the bone was exceedingly dense and difficult to saw. It was necessary to make an independent opening over the lower part of the fibula and resect a small portion of that bone before the two portions of the tibia could be brought together. A sinus at the upper end of the original incision being present, this was disinfected and a small drain introduced. The limb was put up in plaster and dressing was changed from time to time.

On January 3rd, 1910, the left leg was found to be 14¼ inches long, and the right leg 12½ inches. Circumference at a point six inches above internal malleolus—left leg 8¾ inches, right leg 9¼ inches.

The destruction of bone and resulting deformity following acute osteo-myelitis is sufficiently well known to warrant me in presenting the result of the above case.

Without going into the subject of osteo-myelitis in general, I may point out that the disease most frequently shows itself in affections of the femur, the second in importance being the tibia. It occurs most frequently in males, and in the larger percentage of cases before the ossification of the bone. The infection is most commonly caused by the staphylococcus pyogenes aureus, although mixed infections are seen not infrequently associated with the tubercle bacillus.

A beautiful illustration taken from Lexor, reproduced in the American practice of surgery, in the article on inflammatory infections of bone by the lamented George A. Peters, of this city (Toronto), gives a very clear view of the reasons why this disease should cause such destruction when it attacks the long bones. It is because a great deal of the arterial blood supply of the long bones ends in terminal arterioles, and there is not that free anastomosis which is present in many other parts of the body. The case under discussion clinically conforms to the above theories in almost every particular. It shows that the head of the bone, where the blood supply is best and where the periosteum is bound down to the bone or cartilage, resisted the invasion of the disease. It also shows that the shaft was quickly destroyed. During the process of repair it further shows that the latest part of the shaft to repair was at a point half way between the upper and lower epiphyses. You are, no doubt, aware of the various methods which have been adopted, from the transplantation of a whole portion of bone, to the bone clippings used many years ago by Sir William McKeown. Plaster of Paris, catgut, sponge and other materials have been used with varying success and in many instances with total failure.

The case under discussion is a good illustration of the success of the plumbage method. This is the first time I have used extension by weight

in combination with plumbage, with the object of preserving the shape of the limb, and by an attempt at control of the shape of the new formation of bone. I have never seen any reference to this combination of treatment. It will be noted from the X-Ray plates that each epiphysis contributes equally to the development of new bone.

I hope to be able to keep record of this case with a view to learning if the new bone will increase longitudinally in equal proportion to that of the opposite limb, also if Nature will provide for part or whole of the 1¾ inches difference in length as shown by the last measurement six months since.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

BY

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The treatment of Graves' disease by surgical measures is now considered by most surgeons and many physicians as the only rational method of procedure. If one believes the theory of Moebius, that the disease is due to excessive secretion and absorption of thyroid juice, then it is most logical to remove the cause. Kocher holds that the failure of cure after operation is due to the fact that not enough thyroid tissue has been excised. Physicians assert that in ten per cent. of cases the thyroid is not enlarged, and that in these cases surgical treatment would be of no avail, but the evidence is only based on visual observation and palpation. Now, in several cases on which I have operated, the thyroid has been apparently of a very small size, but on opening up the neck a large mass of thyroid was found beneath the sternum, and this was not suspected before operation. Again, cases of Graves' disease, where the gland has developed degenerative changes, have changed into myxœdema.

I do not advocate operation in every case; for instance, in advanced cases, where secondary changes have taken place and where there are temperatures, vomiting, diarrhœa, great restlessness, excessive tachycardia, œdema, and considerable dilatation of the right heart, treatment by other than operative measures should be advised. No case should be operated on until the surgeon has had it under observation for some time and the patient has been carefully observed and the more urgent symptoms have been allayed by rest, ice-bags, etc. Crile believes that "psychic excitation" is the most dangerous factor in operations for Graves' disease, and is the chief cause of the hyperthyroidism from which patients suffering from this affection die after operation. To avoid this excitation, after having obtained from the relatives and friends leave to

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operate, he does not tell the patient he is going to operate, but some days before operation he makes the patient inhale every morning some essential oil (such as eucalyptus) in the inhaler, at the same time applying to the neck antiseptic dressings. On a given morning, having previously given a hypodermic injection of morphia and atropine, he substitutes an anæsthetic for the essential oil, and thus the patient undergoes operation without any previous knowledge of the fact. I have tried this method in a number of cases and have been much pleased with it.

Another very valuable suggestion has been made by Charles Mayo, which I have found of great use, namely, to avoid the toxæmia following operation, saturate the patient with water, by mouth, continuous irrigation through the rectum, or even by large subcutaneous injections of normal saline.

In apparently the most favourable cases of true Graves' disease the operation is not without danger. In cases in which the operation has been most successful, within 24 hours, toxæmia, or hyperthyroidism, may appear. This is manifested by the tremendous pulse rate, restlessness, the great nervous excitement, high temperature, and sometimes delirium, followed by death in 24 hours. Even flooding the patient with saline is of no avail. In other cases, danger from loss of blood and absorption of the toxic blood lessens the chance of recovery of the patient. In the very vascular forms, accompanied by great nervousness, excessive tachycardia, and a feeble heart, operation had better not be undertaken.

As to the anæsthetic, for some time past I have used a mixture of Ether and Chloroform, 2-1. General anæsthesia administered by an expert need not be dangerous. Local anæsthesia I have not found satisfactory. In Graves' disease it increases the psychic excitation, which every operator is so anxious to avoid. If there be extensive heart lesion, and it is determined to operate, local anæsthesia might be practised, but in such cases operation had better be avoided altogether.

Other methods of operation than excision have been advocated for the cure of Graves' disease, such as ligature of the four thyroid arteries, exothyropexy, or the exposure of the thyroid without excision, and excision of the cervical sympathetic, as advocated by Jaboulay. Exothyropexy has been abandoned, and excision of the sympathetic has only relieved the exophthalmos, the tremors and tachycardia persisting. Ligature of the four thyroids has been proved almost as dangerous as excision of the gland, and not nearly so efficacious. But ligature of two or more thyroid arteries has been practised as preliminary to excision with success.

Having determined on operation, the patient having been suitably

prepared, and half an hour before operation a hypodermic injection of morphia and atropine given, an anæsthetic is administered by a skilled anæsthetist and the operation performed. I need not go into details of operation, but should advise that it be done rapidly; that any bleeding point should be carefully secured, for much bleeding is dangerous, chiefly on account of the absorption of the toxic blood, and that the parathyroids be left in situ as far as possible, though, personally I have never seen a case of tetany follow even where these have been disregarded, yet such cases are occasionally reported. It is my practice to secure the superior thyroid artery, turn the gland over, and secure the inferior thyroid, and then remove the lobe of one side carefully without too much handling. It is my custom to remove one lobe and the isthmus, and, if the other lobe is much enlarged, to ligature the opposite superior thyroid and perhaps remove part of the remaining lobe. Having sutured the divided muscles, the wound is closed with drainage; this I continue for from 24-48 hours. Immediately after operation, rectal irrigation is begun, and often, in addition, I use large subcutaneous injections of salines.

If the time for operation is properly chosen and not delayed too long, the recovery of the patient is the rule. The fatal cases, which are very distressing, are those in which, previous to operation, there has been temperature, great excitability, and perhaps delirium, with secondary changes usual in cases in which the disease has been of long duration. If all cases are not cured by operation, all are benefited. Some cases after a year or two relapse temporarily and then fully recover; others come to a second operation and more of the gland is removed with benefit.

The first symptom to be relieved after operation is the tachycardia, and if the heart is not too severely damaged it recovers completely. The exophthalmos is slow to disappear; the gastro-intestinal symptoms are almost immediately improved, the patient gains weight, and the depression and melancholia quickly disappear, and the patient after a few months to a year feels capable of resuming occupation and intellectual effort is a pleasure rather than a pain. In one case, however, where all the prominent symptoms disappeared soon after operation, the repression and melancholia persisted, and although the patient went home and resumed her household duties, a few months later I heard she had put an end to her life by hanging. Another case, operated on after years of invalidism, was soon as well as ever, being able to climb hills and attend to her usual occupation without effort. Two years afterwards the portion of the gland that was left began to enlarge and nervous symptoms reappeared, tremors, tachycardia, emaciation, etc. She wrote

me she was coming back for further surgical treatment, but I heard no more of her for three years, when one day she walked into my consulting room a perfectly well-nourished girl, enjoying life and apparently in perfect health. There was no trace of thyroid enlargement, and she told me the relapse lasted only a few months, and that with rest all the nervous symptoms disappeared. These temporary relapses are not uncommon, but they gradually become less severe and finally disappear altogether.

The cases referred to, in which operation had been performed, and in which the risk is considerable, are those which have always been first under the care of a physician and have undergone prolonged medical treatment, cases in which no one has any doubt as to the severity of the disease, and many of these patients are totally incapacitated from performing any work at all. These cases are the ones which give the surgeon grave cause for worry. In all such cases I have operated on (in the neighbourhood of 50), which recovered from the operation, a cure or great improvement resulted. In two cases in which relapse occurred, a second operation was performed with complete relief to the patient. Several relapsed and got well without operation. Others have after a year or more completely recovered and some have married and still remained well. Some of these cases have been operated on as many as 15 years ago. In no case have I seen any tetany, nothwithstanding that in early cases the parathyroids have been quite disregarded. In some cases the parathyroids have been found imbedded in the gland, or removed with one-half, and yet no ill results followed. I may perhaps have been fortunate, but such is the case that in the removal, partial or complete, of over 200 goitres, I have never seen tetany, and in only one case, and that one of carcinoma, have I seen myxœdema. In his operation for exophthalmic goitre, Kocher's latest statistics are: 95 per cent. of operative recoveries, with cure in 75 per cent., and improvement in the remaining 20 per cent.

Statistics as to the results of operation are very misleading, especially in Graves' disease, for there is a form of acquired or pseudo-Graves' disease, which Kocher calls Struma Gravesiana Colloides, where operation is quite safe, and these cases are often included in the brilliant results of the operative procedure for the cure of exophthalmic goitre. In this form the goitre has existed long before the nervous symptoms have developed; in fact, the symptoms of Graves' disease are, so to speak, grafted on the common form of colloid goitre. The symptoms are less severe than true Graves' disease, exophthalmos is often wanting, there is less dilatation of the heart, and altogether the disease is of a milder type. In such cases operation causes but little anxiety. I have operated on

many such and always with resulting cure. I have no doubt as the technique of operation for exophthalmic goitre becomes more perfected and our knowledge of the cases proper for operation improves, the immediate results of operation will be better.

One thing I should like to impress on the physicians, is that early cases are much safer to operate on than old ones, and the surgeon should not to be called in only to cases which are desperate and have yielded to no medical treatment, but he should see the cases as soon as diagnosed, and a consultation would then determine whether the case is one for surgical interference. Those cases in which medical treatment availeth not are not the best for surgical operation.

THE PSYCHO-NEUROSES IN ASYLUM PRACTICE.

BY

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The assumption that at least a considerable proportion of those to whom this paper is addressed have had no special training in psychiatry, and are, consequently unfamiliar with the terminology of that specialty, demands of the writer an effort to present his subject freed as far as is possible from the technicalities and abstrusities which abound in the literature on the psychoses and psycho-neuroses. The subject is so large as to preclude its full discussion in a paper of moderate length. It seems desirable, therefore, that my paper should be both elemental and general, that I should avoid debatable points, and should eliminate many references which might well be introduced for purposes of illustration or emphasis. Necessarily this implies an incomplete and fragmentary interpretation of the subject, especially as the writer, at no time facile in expression, finds unusual difficulty in presenting so technical a topic in a non-technical way.

Further embarrassment is experienced because of the impossibility of drawing a line between the neuroses which have a mental cause and the psychoses. Hysteria, doubtless the most clearly defined of the psycho-neuroses, has for many years been claimed both by the neurologists and the psychiatrists. Comparatively few of its victims require admission to an asylum, yet that this disease bears relation to definite insanity, now seemingly as a causal factor, now as an incidental feature colouring the clinical picture, now possibly as a sequential condition, is the testimony of many of the authorities on mental diseases; and doubtless everyone here to-day has more than once experienced difficulty in deciding whether

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or no a patient with marked hysterical symptoms should be committed to an institution for the insane. So, too, the fears and scruples of psychasthenia grade in severity until a point is reached when it becomes most difficult to determine whether they should or should not be regarded as evidence of insanity. And, were it necessary, instances might be multiplied to set forth the impossibility of always differentiating between these inter-related rather than closely allied conditions.

The question of etiology remains one of the most difficult and indefinite with which the psychiatrist must deal. Should a body of psychiatrists be asked to name what they consider to be the causal factor of which we have most certain knowledge, a majority would unquestionably say alcohol. There seems to be an obvious connexion between alcoholism and insanity, yet of the method by which the drug produces the mental disorder, we have to confess much ignorance. Such being the case in so conspicuous an instance of seeming cause and effect, we may surely hesitate in dogmatizing an etiologic association between a neurosis characterized by a greater or less partition of consciousness and a state of mind in which consciousness may or may not be greatly disturbed. Analyses sufficiently minute to determine definite splitting of consciousness have not as yet been carried out in such numbers of insane patients as to warrant general conclusions being drawn, and it is consequently well to be chary meanwhile. But of this we may speak with some assurance—certain conditions which tend to the production of the psycho-neuroses play a causal role in the psychoses also, and it is safe to say that the predisposition to the psychoneuroses constitutes also a predisposition to insanity.

We have ceased to attach importance to fatigue of the nerve cells from excess of functional activity as a cause of mental breakdown. The total bulk of the cortical cells is so inconsiderable that any toxic material formed by them must be small in quantity and probably a negligible element. But we have ample evidence of the sensitiveness of the nerve cells to toxins elaborated by other organs, and that these toxins can be altered in amount and in virulence by varying emotional states has been demonstrated over and over again. In this way, emotional states, especially if of a depressive nature and when prolonged, are regarded as having a definite place in the etiology of insanity. It is also to emotional disturbances, though perhaps of a very special type and under special conditions, that the psychoneuroses are assigned. In at least this particular, then, they have common ground with the psychoses. When, therefore, we find undoubted insanity developing upon what appeared to be a psycho-neurosis, we may be justified in assuming the primary cause to be some unpleasant experience, productive of a disagreeable

effect, which was not properly reacted to. The fear of insanity with which many psycho-neurotics are haunted proves, in a certain proportion of cases, to be well grounded, and by no means few of those who do not possess this fear eventually become insane. Just what the relationship is can only be conjectured, but my impression is that the psychoneuroses do not often in themselves bear a causal relation to the psychoses, but are rather incidental to the development of such conditions—although they influence the clinical picture and may colour it largely. Usually, however, even in individuals who are predisposed hereditarily or otherwise, a number of causes doubtless co-operate to produce insanity, and if a psychoneurosis has developed purely as a result, say, of a repressed emotion, some additional factor must be necessary before such a condition will pass over into insanity.

It is scarcely necessary in this connexion to argue for or against Freud's contention that the unpleasant, unreacted-to experiences to which he attributes so great importance in causation, are of a sexual nature. It would appear admissible that unpleasant experiences of any kind may act as causes, and it is quite possible that the average individual is more frequently and sometimes more intensely exposed to disturbing influences of a non-sexual character than to those the importance of which Freud accentuates. Until we are able to properly apportion the influence of all the various possible causal factors, there appears to be no reason for assuming an insistent attitude in this particular.

The interest added to the study of the psycho-neuroses by the teaching of the Breuer-Freud school is largely responsible for the attention which has recently been directed to this group of disorders. It is quite too soon to attempt a valuation of this teaching, and, notwithstanding its attractiveness and suggestiveness, I am not sufficiently convinced, as yet, to commit myself definitely to its support. Nevertheless, it may reasonably be claimed that our present enlightenment is in some measure due to the investigations of Breuer and Freud and their followers, and, in the case of hysteria at least, we owe to this school a remarkable addition to our therapeutic armamentarium. By psycho-analysis we are not only able to discover the pathogenetic factor of the hysteria, but in exposing it we thereby effect a cure of the condition. In the case of the obsessions and anxious states, psycho-analysis is potent in revealing the genesis of the condition, although it does not yield the extraordinary therapeutic results which obtain in hysteria. In pronounced mental disease, psycho-analysis becomes progressively more difficult and unsatisfactory in proportion to the grade of mental defect, and it is quite too much to expect that its practice will ever become applicable to conditions in which there is considerable mental reduction. Nevertheless, the

illuminating work of Jung on the psychology of dementia præcox shows that we do not lack opportunity even here, and it affords us an instructive comparison between dementia præcox and hysteria. That the milder manic states are accessible to this method is proven by a recent article by Ernest Jones, and certain mild depressive cases, in which control over volition is retained, yield fair return for labour expended. In such conditions we must be content to lay bare the pathogenetic mechanism, and should not count upon direct therapeutic benefit. Anything which can assist in solving the difficult problems of cause and effect with which the psychiatrist is concerned is welcome, however, not merely because of the immediate satisfaction it affords us in clarifying our position, but also because of the promise of future advance in treatment. It is needless to state that the earlier in the course of the disorder the method of psycho-analysis is applied, the more complete will be the result. Here lies the opportunity of the general practitioner, to whom the psychotic patient appeals for treatment long before he falls into the hands of the psychiatrist. No greater problem presses for solution to-day, whether considered from the medical, sociologic, economic or purely humanitarian aspect, then the growing prevalence of insanity, and the physician in general practice is obligated both to his clientele and to the nation at large to prepare himself for his share of the task of uncovering the mysteries of mental derangement. The unusual interest which attaches to Freud's methods, the near relationship which is now seen to exist between conditions formerly thought to belong to the realm of the neurologist and those which have always been conceded to the psychiatrist, and the outstanding importance of sound-mindedness to the community, form a leash of reasons which should attract every practitioner to a study of this great subject.

Whether wittingly or no, we have all been practitioners of psychotherapy to a greater or less extent. All admit the influence of suggestion, whether intentional or purely accidental, in determining the outcome of an illness. We have all witnessed good results, and doubtless we have all witnessed most unfortunate results, following upon some impression we have made upon uor patients. Psychotherapy, however, embraces more than suggestion, and its successful application requires much more than mere capacity to impress a patient with one's knowledge and skill. We are gradually accumulating information which promises to enable us to make use of psychic treatment in a thoroughly rational manner, instead of in the empiric fashion which has obtained heretofore. Already we find isolated cases in which we can prescribe it with almost mathematical nicety, and almost with certainty of the result. But there are instances in which we can control the attention

of the patient, and in which there is no notable intellectual or volitional defect. It is very doubtful if there will be material enlargement of our resources in this particular in the treatment of the insane. Yet the success which attends the application of the advanced psychotherapeutic methods in the treatment of related conditions should stimulate us to more diligent use of the psychic practices which have been found of value ever since the days of Hippocrates. Rational conversation, persuasion, judicious argument, appeal to reason, stimulation of hope and of confidence—these are measures which are more or less appliacable to and more or less efficacious in all cases. In the milder types, the newer methods should be given a fair trial in order that a just estimate of their value may be formed. But for the present, at least, such measures should be adjunctive to the regular therapeutic procedures.

It is particularly in prophylaxis that we may expect the greatest results to psychiatry from the newer methods. The applicability of these methods to the neuroses or psychoneuroses which tend to pass over into insanity should be fully appreciated, and there can be little doubt but that their intelligent and careful adaptation to such cases will prove an appreciable factor in the prevention of mental disease and thus in lessening the prevalence of this dread condition. I feel that this is the point in my paper which should be especially urged. The experience of many institutions for the insane is that, despite our increasing knowledge, the cure-rate in insanity is not showing improvement. The proportion of cases of dementia præcox and of general paralysis finding their way to our institutions is steadily growing. These conditions, once established, offer small prospect of cure, and thus we have reason for the failure of hospital statistics to show betterment. We cannot yet say what prophylaxis will do towards the relief of this unfortunate state of affairs, but it appears highly desirable that no method by which mental breakdown may be obviated should be neglected. Here again the appeal is to the general practitioner, who alone meets cases at a time when prophylaxis is possible.

A CONTRIBUTION TO THE STUDY OF ACUTE POLIOMYELITIS BASED ON THE OBSERVATION OF THIRTY-EIGHT RECENT CASES WITH TWO AUTOPSIES.*

BY

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While we recognise that it will be impossible to add to the description of acute poliomyelitis in its epidemic form as given by Wickman,[1] in 1905, and Harbitz, and Scheel,[2] in 1907, of the great epidemics in Nor-

*Read before the Canadian Medical Association June 1st to 4th, 1910.

way and Sweden which occurred in the years between 1903 and 1906, it may be of interest to compare the disease as it appeared in Montreal in the epidemic of the summer and autumn of 1909.

Wickman and his colleagues worked out the details of four epidemics, one of them consisting of over a thousand cases with a mortality of 13.1 per cent. Within the last three years severe epidemics have occurred in New York, in 1907,[3] consisting of about 2,500 cases, and again in the summer of 1908,[4] when about 1,200 cases developed. In Victoria, Australia, in the autumn months of 1907, Dr. Stevens[5] analysed 135 recent cases. In Massachusetts, during the summer of 1908, Lovett[6] and Emerson[7] gathered together 234 cases, in Salem, Virginia, Wiley[8] and Dardem reported 25 cases of an epidemic which occurred the same summer.

Vienna and lower Austria suffered from a similar epidemic in 1908, when Zappert[9] found data from 266 cases available. Epidemics of moderate severity have been reported as having occurred this past summer in Marburg[10] and also in Westphalia[11]. It is interesting to notice also that there has been an unusual frequency of poliomyelitis reported in France[12] during the past summer.

I may say that I have been led to the same conclusion as these authors as regards terminology. Acute *anterior* poliomyelitis is a misnomer as the disease is far more widespread than this term implies; it is really an acute meningo-poliomyelitis and may be encephalitis.

It is impossible in the absence of Government recognition, where the notification of the cases as they occur is not compulsory, to speak of the epidemic as a whole. It is even more impossible to form an idea on the causation of such an epidemic without a systematic examination into the surroundings of every case. That the expense to the Government of such a systematic study would be justifiable one can judge from the following report, including as it does only cases which have come under my own personal observation in the neurological department of the Royal Victoria Hospital and in my private practice, between July 1st and December 31, 1909.

I have seen in all thirty-eight cases, twenty-six of which occurred within the city limits, three other cases occurred on the Island, two at Ahuntsic, and one at Highlands, one came from the Laurentian Mountains, one from St. Hubert, Chambly Co., one from Ottawa, one from Brownsburg, P.Q., one from Stanbridge East, one from East Hatley, and one from Halifax. It must be remembered that this does not include those patients who were treated at the Montreal General or the Western, the Hotel Dieu or the Notre Dame Hospitals, or who were treated by

their own physicians. In reply to a circular sent to the Montreal physicians I have notes of many of these, and I hope at a later date, in conjunction with my colleague Dr. Shirres, to be able to give a fuller although still necessarily an incomplete account, of the number of cases that occurred in the city during the summer. I may say, for the purposes of comparison, that previous to July, 1909, we have only had two sporadic cases treated in the Hospital or the Out Door Clinic since 1906.

The age of the patients varied from three months to forty-two years; 60 per cent., however, were only three years old or younger. Tabulated they are as follows:—

25	were between the ages of	1 and	5
8	" " "	6 "	10
1	case was " "	11 "	15
1	" " "	21 "	25
2	were " "	36 "	40
1	was " "	40 "	45

The distribution according to sex was practically equal, there being 18 females and 20 males affected. The nationality of the individual apparently played no part, there being 50 per cent. English speaking, and 31.64 per cent French speaking patients among those affected; 12.82 per cent. were Hebrews, while Italians and Russians each contributed 2.63 per cent of the total number. This is, I think, approximately about the proportion of the different nationalities seen at the clinic.

The greater number of cases occurred in August and September. Classified according to the month in which they occurred they are as follows:—

July	4	September	13
August	12	October	9

There is no doubt that the disease is an infection, but the infectibility must be very slight, as in nearly every case there were one or more other children in the same house, and in no case of this series was more than one affected. We all know, of course, that cases have occurred where several members of a household have been affected, and cases are reported where the infection has apparently been carried by a third person who has himself not suffered from the disease, but these cases are relatively seldom. In two cases there has been rather a strange coincidence. In one, the child about two years old, developed a paralysis of the left deltoid muscle; the father has a precisely similar paralysis of the same muscle which he developed in infancy. In the second case, also a child with paralysis of the deltoid, a brother had a similar localized paralysis which had developed one year previously. Practically

all the cases in the city have developed in the overcrowded districts to the east and south where cleanliness is uncommon, although a few have come from amidst apparently clean surroundings.

In the majority of cases the disease was preceded by certain prodromal symptoms which lasted on an average a little over two days before the onset of the paralysis. It is true that, in five cases, the paralysis developed suddenly while the child was playing and apparently in its usual good health. In others the prodromata were present for six or twelve hours before the onset of the paralysis; in others, again, it was as long as five to seven days after the onset of the prodromal symptoms that the paralysis of the limbs appeared.

As a general rule the patient complains of a little indefinite general malaise, has some headache, and may vomit once or twice. The bowels are usually constipated, but in a few cases there has been diarrhœa. Some indefinite gastro-intestinal disturbance so common in children is suggested, especially as the fever is only slight as a rule; but if the child be old enough to make a complaint, or if in younger ones the limbs be moved, there is immediately evidence of pain and tenderness in one or other or perhaps all the extremities, which should suggest something more than the ordinary gastro-intestinal condition of infancy. In about 30 per cent. of the cases there has been a history of more or less marked clinical signs of meningitis; in only three cases were there convulsions.

Ever since the time of Mephibosheth, the son of Jonathan, of whom it is reported that at the age of five years his nurse let him fall from her arms, and from that time he was not able to walk, we have frequently the history of a preceding accident to which the patients attribute the onset of the paralysis. A similar history has been given in a few of our cases, but in none did it seem possible to connect it as the causative factor. In two the fall was of such a slight nature that it seemed far more likely to be the result rather than the cause of the paralysis. As a rule, the paralysis at its onset is at its height, but in some cases there has been a spread of the disease quite similar to what one sees in the so-called Landry's paralysis. Both of the cases, whose clinical histories with autopsy findings will be reported later, are examples of this. In both cases the cause of death was due to final involvement of the respiratory centres.

The *spinal form* of the disease was by far the most common. At the onset at the height of the paralysis, all extremities were powerless in nine cases; both legs were affected in twelve; both arms alone in only one; one leg was alone affected in four; and one arm alone in six.

Both legs and one arm were picked out in one case, and one leg and one arm in two cases, in one of which they were on opposite sides of the body.

The *pons and medulla* were affected in three cases, the face alone being paralysed in two cases; in the third not only was the left side of the face paralysed, but there was oculo-motor and motor paralysis of the fifth nerve, with the consequent strabismus and ptosis, and inability to close the jaws; the patient, a child of two and-a-half years, could not protrude the tongue. This was later associated with a spastic paralysis of the right arm and leg, showing a spread of the lesion and the involvement of the upper motor neurones to the limbs of the opposite side of the body. This child eventually made a good recovery.

In three cases, while one could hardly call them *abortive,* still the lesion was evidently of a less serious nature, as the muscles never lost their reaction to the Faradic current, and there was a perfect return of function in the course of six weeks. One of these cases was a man of 42, in whom both legs were completely paralysed; another was in a man of 37, in whom the anterior tibial groups of muscles were picked out, and the third was a girl of nine, in whom the left side of the face and some of the ocular muscles were paralysed.

There was retention of urine for from one to two days in only three cases. In the majority of cases there was a marked and rapid improvement in the extent of the paralysis in the first ten days. In one case, for example, where all extremities were paralysed for a week, the right arm was the only one which remained paralysed, and in another similar case the right leg alone remained affected. In three cases where the whole arm had been affected the deltoid was the only muscle that did not regain its function. The muscles of the hands and feet were not in any case completely and permanently paralysed.

The tenderness on movement of the affected limb was severe in every case, and remained present for several weeks in many; in one case, indeed, the spontaneous pain and later the excessive tenderness with rapid atrophy of the muscles suggested an associated *neuritis.* There was definite impairment of sensibility observed in a few cases.

After the first two weeks the improvement is very much slower and dependent to much greater extent on the care and treatment received; contractures are apt to occur in muscles retaining some power where they are unopposed, their antagonists being paralysed at least temporarily. This, if left alone, goes on rapidly to deformity and prevents the return of function in the paralysed group even if the nerve centres do recover. On the whole it has been a pleasant surprise to me and my colleagues

in the Neurological Clinic, judging from the prognosis given in the usual text books, to see how much recovery has taken place in the course of two or three months' treatment in cases where the electrical reactions gave anything but a good prognosis.

The following is the clinical history and the autopsy findings in two cases:—

*Case I.**—The following is from Dr. McCrae's notes—E., aged 24 single, engineer; admitted complaining of weakness, loss of appetite, pain in the right hip, and inability to use the hands; seven days previously he had developed a sore throat but worked till the second day before admission. On this day he went to bed. For these seven days he complained of headache, at first frontal and occipital, and finally the pain was in the neck. The day before admission he vomited thrice, was constipated, and reported difficulty in thinking, and on the day of admission had dyspnoea on lying down. His previous history is uneventful, save for a severe attack of neurasthenia at the age of 16, for which he had several months treatment.

On admission to the Royal Victoria Hospital at noon, his temperature was 99, his pulse 76. He could not hold a cup in his hand. His breathing was jerky and abdominal; his pupils reacted to light and accomodation; there was no nystagmus, the fields of vision were normal. The throat was clear, some pain was complained of in throwing the head forward. Dermatographia was marked; there was no tenderness of the spine or hips; the abdominal reflexes were equal and active.

The grip of the hands was weak and they were held semi-flexed; the wrist and elbow reflexes were not obtained, knee jerks were lessened, Kernig's sign was 135° on both sides, ankle jerks not obtained, no Babinski's phenomenon. All movements of the legs were normal except raising the extended limb, which was done weakly and with tremor. Sensation to rough tests was normal. About 3 p.m. the temperature was 99, the pulse 76; the dyspnoea had increased, the accessory muscles of respiration being used.

At 7 p.m., when he was seen by the writer in consultation, the condition was as described above. The respirations were about 65 and abdominal in type, the temperature 99, the pulse 56. In spite of the extreme dyspnoea the accessory muscles of respiration were not in action, at the same time the patient could use the sterno-mastoids to some extent voluntarily in turning the head on the pillow.

The left knee jerk was obtained but weakly. The muscles all contracted well to mechanical stimulation, for instance, when struck with

* These two cases have already been published in a less detailed preliminary report, Montreal Medical Journal, December, 1909.

a percussion hammer, and showed a condition of myoedema; that is, when they were struck or pinched, a slow localized contraction of the muscle took place, giving rise to a small ridge which disappeared again in 20 to 30 seconds. The muscles all reacted well to Faradism. At midnight the patient's temperature rose to $100\frac{3}{5}$ and the pulse was 76. Cerebration was apparently quite clear. He died suddenly at 3 a.m. of respiratory failure. At autopsy, which was performed 8 hours after death, the following conditions were noted:

The skull was of moderate thickness. The dura was firmly adherent to the vertex, the sinuses free. The pia over the vertex was cloudy with one small, quite thickened and white area on the left hemisphere about the middle, close to the longitudinal sinus and in the immediate anterior extremity of the right frontal lobe was another; each measured about 5 mm. in diameter. The superficial vessels of the vertex were slightly congested. The pia over the base appeared normal, but there was more marked congestion of the vessels over the brain stem. There was no thickening of the pia on the superior surface of the cerebellum. The brain weighed 1,525 gms.

Cord: The spinal dura appeared normal. On palpation the cord at the lumbar enlargement was hard and felt like a lead pencil. In the dorsal region this was not so noticeable; but in the upper part of the cervical region it could be felt through the dura. On opening the dura there was no particular congestion of the vessels of the anterior surface of the cord, while those of the posterior surface were slightly so, especially in the lumbar region and over the cervical enlargement. On the posterior surface there were numerous irregular shaped, hard, pearly white, plaques of cartilaginous hardness. There was a slight tendency, especially in the lower dorsal and lumbar regions, to a wrinkled appearance in a transverse direction, as if a fine thread had been wound tightly and irregularly around the cord; this was thought to be due to the œdema of the cord. On section in the lumbar region there was a moderate amount of eversion of the edges of the cord, and there was apparent to the naked eye a softening of the anterior horn on the left side. In the dorsal region this eversion of the edges, on section, was even more marked and the grey matter was softened and indistinctly demarcated. There was a visible congestion of the vessels of the grey matter of the cord in this region.

The spleen was enlarged and the lymphoid tissue strikingly prominent. There was also acute hæmorrhagic nephritis.

Microscopical examination gives the following findings:

1st. *Sacral Segment*..The meninges show a marked round-celled in-

filtration chiefly in the neighbourhood of the anterior spinal artery and penetrating into the anterior fissure along with the vessel; but it is present also on the posterior aspect of the cord. The spinal vessels are markedly congested, and there is an excessive perivascular lymphocytic exudation. There is no evidence of thrombosis in any of the vessels. In the substance of the cord the vessels are dilated and congested generally, not only in the region of the grey matter but in the lateral and posterior columns as well. They are in every case surrounded by numerous round cells, mostly lymphocytes; and there are also a great many plasma cells amongst these. A few ganglion cells still exist with a fairly normal outline especially in the lateral nuclei. Apart from these there may be seen cells in various stages of distruction, some large and swollen, staining poorly with the nucleus almost extruded, others small and shrunken staining deeply, with no nucleus visible, others again scarcely visible on account of the numerous small round cells that encompass them, evidently the final stage in their disappearance.

2nd. *Lumbar Segment*: The same infiltration of the meninges is present as in the former section, especially evident around the vessels. There is very marked generalised congestion of all the vessels in the cord substance with perivascular exudation. This is more evident in the anterior horns on account of the better vascular supply, but the individual vessels of the posterior columns of the cord show an exactly similar condition. There has been a rupture of a small vessel in the right anterior horn with a small hæmorrhagic extravasation. Throughout the section there is the same round celled infiltration, chiefly lymphocytes, with polymorpho-nuclears, and a good many large plasma cells. This infiltration is most marked in the grey matter of both the anterior and posterior horns and the white matter immediately surrounding this. The ground substance of the cord has a rarified appearance with dilated meshes due to the odema present. No nerve cells can be discovered, only occasional clumps of white cells show the last stages in their disappearance.

9*th Dorsal Segment*: The same infiltration of the meninges is present although perhaps less marked than in the lumbo-sacral region. The cord substance has the same œdematous appearance and shows the same general leucocytic infiltration of the grey matter of the anterior and posterior horns and the white matter immediately surrounding, although this also is not so marked as in the previous sections. The same extensive perivascular exudation is present. Not a nerve cell can be found at this level of the cord save three in Clark's column on the right side. and as there are no collections of leucocytes, as in the former sections

marking the final demolition of the cells, this has evidently already taken place.

6th Dorsal Segment: Is practically the same as the former section.

8th Cervical Segment: At this level there is the same evidence of meningitis as in the other sections, and here, also, the nerve roots do not appear to be involved. There is the same intense congestion of all the vessels in every part of the cord with the perivascular exudation. There is the same general infiltration of round cells in the grey matter of both the anterior and posterior horns and the surrounding white matter, and the utter absence of any nerve cells.

4th Cervical Segment: Shows the same picture.

Lower Medulla: Here we see the same evidence of meningitis, but it is even more intense than in the lower levels of the cord, the same general congestion and perivascular exudation of lymphocytes and numerous plasma cells. There is also a fairly well marked general round-celled infiltration of the gray matter, but there are numerous nerve cells still remaining in a good state of repair, here and there one sees in the gray matter clumps of leucocytes which probably represent the final stage in the destruction of some cell, but as a general thing the nerve cells appear normal.

Medulla at the level of the 9th Nucleus: The infiltration of the meninges is less marked than lower down, though it is present to a slight extent. One sees the same congestion of the vessels and the perivascular exudation of leucocytes, which is most marked in the formatio reticularis. There is also a certain amount of round-celled infiltration in the reticular portion though the nerve cells do not appear to be affected.

Pons, Level of the 4th Nucleus: The vessels of the formatio reticularis are here also congested and surrounded by numerous leucocytes. The nerve cells of the nucleus stain well and appear normal.

At the level of the 3rd nucleus the same thing is visible.

Sections of the optic thalamus and of the left centrum ovale show nothing abnormal.

Sections of the left frontal cortex show slight infiltration of the meninges beyond which there is nothing abnormal.

The bacteriological examination for which I am indebted to Drs. Tytler and Klotz is a follows:

At autopsy, cultures were made from (1) the heart's blood, (2) pericardial fluid, (3) liver juice, (4) spleen juice and (5) cerebrospinal fluid.

At the same time smears were made from the various fluids collected and were examined in stained specimens. Organisms were found in

the heart's blood, pericardial fluid and cerebrospinal fluid. The organisms from the different regions were alike morphologically, but were most abundant in the cerebrospinal fluid. These organisms appeared as cocci, occurring in pairs and occasionally in tetrads. A few were flattened but most of the organisms were spherical. The majority of the organisms were decolorized by Gram's method, but some resisted decolorization after the nuclei of the leucocytes were decolorized. The cerebrospinal fluid was distinctly cloudy and showed a large excess of leucocytes.

Cultural: Organisms were found in the cultures taken from (1) the heart's blood, (2) pericardial fluid, (3) liver juice and (4) cerebrospinal fluid. No growth was obtained on any of the media on the first day. On the second day a growth appeared in plain serum water in all inoculations save those of the spleen juice.

Organisms could also be found on blood serum and blood agar media although there was no macroscopic evidence of growth. Organisms were also found in the sediment of the dextrose broth tubes. Transfers made from the inoculated media to new tubes proved unsuccessful, save where serum water was used. In this latter medium three generations of the organism were obtained, but at the end of a week no further transfers grew on freshly inoculated media.

The organisms which were obtained in the cultures were morphologically similar to those noted in the direct smears. Most commonly the cocci were seen in pairs and not infrequently the individuals were much flattened towards each other. Here and there tetrads were noted. As a rule the organisms were larger than those seen in the direct smears.

The organisms stained well with the ordinary stains and with Gram's method were decolorized with some difficulty. It was found that after decolorizing five minutes some of the organisms still remained positive, while many had given up the stain.

Case II.—G. E., a well developed boy of 10 years, had been spending the summer with his parents among the Laurentian lakes, and previous to the onset of the present illness had enjoyed perfect health. Early on the morning of August 5th, he complained of headache, and his mother noticed that his breathing was more rapid than usual. He had spent some time the previous day, which had been very hot, swimming, and then lying ont on the roof of the cottage in the sun where there was a little breeze. Just before sunset he and some friends paddled some considerable distance down the lake, but on the way back after sunset he did not paddle but lay in the bottom of the boat. He was scantily clad in the light clothes he had worn during the heat of the

day, and on being asked said that his feet were cold. The pain in his head and the back of the neck continued during the day of August 5th. His temperature was 100° F., and he would take no nourishment. The following day he had developed a flaccid paralysis of the lower extremities with loss of reflexes; the arms, later in the day also became paralysed, especially the left. Beyond the pain in the head and neck he did not suffer and his mind was clear, respirations still very rapid, but the temperature had fallen to normal and he took some light nourishment. The next day there appeared to be some improvement in the arms but otherwise no change from this on, except that the respirations became more and more difficult. When he was seen by Dr. Fraser Gurd for the first time on the fifth day of the disease there was paralysis of the intercostals and the diaphragm; life was dependent on the extraordinary muscles of respiration only, and, as was expected, the patient died that night of respiratory failure.

The autopsy was performed at the home of the parents 10 hours after death. The brain and cord were removed, the other viscera could only be examined *in situ,* and showed no abnormality. There was nothing to be noted about the calvarium, the dura was of normal colour and glistening; there was no congestion either over the cord or brain.

On removal the brain looked large for the size of the head, and it weighed 1,550 gms. The superficial vessels were not particularly engorged, but the surface of the brain had a peculiar slightly bluish gray colour; on section the edges evert showing the capillaries of the cortex somewhat engorged in places.

Cord: The dura was covered posteriorly with a thick layer of fat, The dura itself was healthy and glistening. On palpation through the dura the cord felt extremely hard, especially over the lumbar and dorsal regions. On opening the dura the vessels of the pia-arachnoid were slightly congested. The whole cord from the lower end of the cervical enlargement to the sacral segments has the appearance of having been wound carelessly but tightly with fine thread showing everywhere little irregular ridges ond bulges, evidently the swollen cord structure bulging through the strands of the pial tissue. There was some slight cloudiness of the pia-arachnoid over the posterior surface. On section, the edges evert to a marked degree, and the anterior horn region looks softened, swollen, and almost diffluent; that is, in the lumbar, dorsal, and to a less degree in the lower cervical region.

Second Sacral Segment: Microscopically, there is infiltration of the meninges with round cells equally well marked all round the cord.

This infiltration does not affect the nerve roots. The superficial vessels are congested and surrounded by lymphocytic exudation; those of the cord substance are similarly congested and show the same surrounding round-celled exudation. The infiltration of the grey matter is also present, but not to such a marked extent as in the previous case. Many of the nerve cells have disappeared, but a few still remain and retain their normal appearance. The congestion and the surrounding exudation is quite general affecting these vessels coming in from the periphery of the cord as well as the branches of the anterior spinal artery.

Fourth Lumbar Segment: The same picture here, slight meningitis, marked congestion of the vessels of the substance of the cord with an occasional small rupture and hæmorrhagic extravasation. The same perivascular exudation of lymphocytes and round-celled infiltration of the grey matter. The ganglion cells have entirely disappeared.

Ninth Dorsal Segment: An identical appearance to those already described. Only a few nerve cells in Clark's column on the left side remain.

Eight Cervical Segment: The infiltration of the membranes is less marked than in previous sections. It is present to the greatest extent in the anterior fissures and follows the course of the vessel into the left anterior horn; the vessel is congested but shows no evidence of thrombosis. The congestion of the vessels in the substance of the cord is general, but the perivascular round-celled infiltration is by no means so marked as in the previous case, nor is the infiltration of the grey matter nearly so extreme. None of the ganglion cells are recognizable.

Fifth Cervical Segment: Presents an almost identical picture to that just described, save that there are one or two ganglion cells still recognizable in either horn.

Second Cervical Segment: Presents a similar appearance, save that the round-celled infiltration is again more marked, especially around the vessels, but also in the grey matter.

Lower Medulla: The meningeal infiltration is here present; and there is marked generalized perivascular lymphocytic exudation. The nerve cells, however, appear quite normal.

Right Post-Central Convolution: Shows marked congestion of the vessels of the meninges with surrounding exudation of the lymphocytes; the meninges show a slight degree of infiltration; the cortex appears quite normal.

Right Olfactory Lobe: Shows nothing abnormal, although the vessels of the meninges are congested and show the usual lymphocytic exudation. The posterior ganglia were, unfortunately, not examined in either case.

The pathological picture in the two cases was then very similar, the

second showing simply a more advanced stage of what was seen in the first. There is the same evidence of inflammation affecting both the cerebral and spinal leptomeninges, the same congestion of the vessels both on the surface and in the substance of the brain and cord, especially marked in the latter. There is the same lymphocytic infiltration of the grey substance both of the anterior and the posterior horns of the cord, but this is more marked in the first case where the surrounding white substance of the cord is also affected. In the first case, also, plasma cells are more numerous in the infiltrated parts, and the clumps of leucocytes surrounding the remains of ganglion cells can still be seen, notably in the sacral region, evidently acting as phagocytes demolishing the destroyed cells. The second case shows the process in a slightly later stage, the phagocytic work has been accomplished; the inflammation is beginning to subside again. In both cases the inflammation and œdema of the cord substance is perhaps most marked in the dorsal region; but the cervical and lumbar enlargements are about equally severely affected.

The medulla and pons show the same evidences of meningitis, generalized congestion and round-celled infiltration, especially in the formatio reticularis. In neither case could I find organisms in the tissues. The micro-organisms found in the first case correspond very closely with those described by Gierswold in the Scandinavian epidemic, and since described as present in many cases in almost every epidemic reported. In no case could they be satisfactorily cultivated.

The disease, then, appears to be a general vascular infection, but regarding the ætiology of the disease and the mode in which the infecting agent makes its entry into the body, we still remain in doubt. However, a great advance has been made in the last few months. First, Landsteiner and Popper,[13] and later, Flexner and Lewis,[14] have been able to inoculate monkeys with the disease. The latter workers in a most brilliant series of experiments have succeeded in transmitting the disease through a series of monkeys from one to the other. There work is already too well known to require more than a reference to it. However, they have shown that the ætiological factor is not a soluble toxine, and are of the opinion that it must be some minute organism too small to be seen by the microscope, similar in many respects to the unknown organism of rabies.

They have been able to cultivate this organism, and have caused the disease in monkeys by inoculating this culture. They have shown that the virus will penetrate a Berkefeld filter. They have demonstrated that it retains its virulence after having been frozen for a very con-

siderable time. In view of this last point, is is difficult to understand why the disease should be stamped out in the winter months; unless, perhaps, the carrier of the disease germ is not operative. In any case, continued work should soon show us how to fight this dread disease, in the prevention of which, at present, we are absolutely powerless.

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COLOURED TORIC GLASS FOR USE IN EXAMINING CASES OF OCULAR PARALYSIS.

BY

W. Gordon M. Byers, M.D., Montreal.

While small appliances like that which I have to describe are in themselves unimportant, their widespread use, and their use for a long period, mean in the aggregate a great saving of time; and anything that helps to smooth the difficulties of medical practice is undoubtedly worth while.

In making a differential diagnosis of ocular paralyses, it is customary to place a red glass before one of the patient's eyes, first, to enable him to more easily locate the two objects, and, secondly, to overcome any tendency to binocular vision that may remain. But the use of the coloured glass, as ordinarily taken from the test case, is often the cause of slight but real annoyance. In the lateral ocular movements the vision of the eye before which the glass is placed first strikes the rim of the lens and then passes beyond it, out of the colour field. This confuses the patient, and makes it difficult both for him and the examiner to accurately place the images.

About four years ago I tried to remedy this defect by making a glass double the size of that which is found in the test case; but this only partially overcame the difficulty which I wish to correct. With the

introduction of toric lenses, it struck me that a coloured glass of this sort might be of service in making examinations easier in the class of cases I have mentioned. The little apparatus was procured for me by Mr. R. N. Taylor, of Montreal, from a large company in England, as the leading optical concerns in the United States were unable to make it. It is simply a large, perfectly-ground toric lens, of a rich red colour, properly rimmed, and supplied with a convenient handle; but the wider colour field which the curved glass affords does away almost entirely with the difficulties previously experienced in examining cases of ocular paralysis.

AMBLYOPIA *EX* ANOPSIA WITH ACQUISITION OF GOOD VISION

BY

GEO. H. MATHEWSON, M.D., Montreal.

There has been much controversy as to whether such a condition as amblyopia *ex* anopsia—that is, blindness, or very poor vision, from non-use or lack of education of the eye really occurs. The following case, which is unique in my experience, gives conclusive proof that we really do meet with eyes which do not see because they have not been trained to do so.

On May 27th, 1908, W.G., a boy of 13 years of age, was brought to me with a badly damaged eye. The history given by the boy and his mother was that while playing with some companions on the previous day he had been struck a violent blow on the left eye by a large stone thrown by one of the other boys. Both the boy and his mother stated also that he had never had good sight in his right eye. On examination I found that the left eyeball was ruptured and disorganized with absolutely no vision.

On June 2nd, I enucleated the left eye, and after an uneventful convalescence the boy left the hospital a week later. At this time the vision of the right eye was found to be no more than ability to count fingers at 12 feet, and with the addition of a + 4 spherical glass, it was improved to 6/36. He was unable to read even very coarse print with the glass. I examined his eye under homatropin and found his refraction about the same as without the mydriatic, so prescribed the + 4 spherical glass, telling his mother that his vision might improve. Five weeks later she brought him back, and I was surprised to find that his vision was 6/12 without the glass, while with the glass he could see 6/9, and could read the finest print with ease.

Read at Meeting of Montreal Medical Society, November 19th, 1909.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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AN IMPERTINENT REQUEST.

We have received a communication from the Superintendent of Immigration informing us that much unfavourable comment has appeared in English papers upon the present rules which apply to immigrants entering Canada.

The comment, we are informed, applies chiefly to two regulations; the first, requiring immigrants coming to employment other than farm work, or, in the case of females, to domestic service, to have in their possession at time of landing the sum of twenty-five dollars, in addition to railway transportation to ultimate destination; the second, providing that the consent to emigrate to Canada, required by law to be granted by the Assistant Superintendent of Emigration for Canada in London, to such charity aided emigrants as he considers suited to this country, shall be given only to such as are suited for, willing to accept, and have assured employment at farm work .

We are asked to offer an opinion upon these regulations, so that it may be placed before the reading public of the British Islands, or "Isles," as the dominions of England, Scotland, and Ireland are described. We fail to see the necessity for this additional light, as we are told somewhat gratuitously, that "practically every Canadian paper irrespective of political connexion, which has so far dealt with the subject, has upheld the regulations, and insisted upon Canada being the sole judge as to who shall or shall not be allowed to enter this country."

We shall set aside at once the truculent suggestion, that any serious person has denied that Canada is "the sole judge as to who shall or shall not be allowed to enter this country;" and we shall content ourselves by making the equally obvious statement, that the Immigration authorities and the Labour Unions do not constitute the people of Canada by any large majority.

The movement to keep British artisans out of Canada is instigated by those who desire to see labour scarce, wages high, and the product of craftsmanship dear, and we fail to see why farmers are not equally entitled to demand the exclusion of farm labour so that food will cost even more than it actually does at the present moment.

If the regulations were designed to keep out of this country only the diseased, the vicious, and those who are likely to become a charge upon the community, it would be difficult to controvert them with any chance of being understood; though it could be urged with perfect truthfulness that not all of us are utterly callous to the situation of our more miserable brethren in the Old Country who have done so much for us in laying the foundations of Canada and in protecting us all these years, whilst we have been growing big, and sleek, and fat. We cannot refrain from adding that, if this regulation compelling immigrants to be in possession of five pounds had always been in force, many of those now in Canada would not be here or anywhere else.

In this attempt to manufacture expression which it is proposed to place before the reading public of England as "the consensus of Canadian opinion," we hope the Immigration authorities will not omit to include this opinion which is expressed by the MONTREAL MEDICAL JOURNAL, even if they are disappointed in our response to their lead, or do not like this dance to their piping. If they do forget, we shall take the proper steps to remedy the omission.

DR. WILLIAM GARDNER'S RETIREMENT.

The announcement which was made by the Dean at the Convocation for conferring degrees in the Faculty of Medicine, that Dr. William Gardner had signified his intention of retiring from the chair of Gynæcology in McGill University, came with surprise to those who heard it for the first time. Dr. Gardner's intellectual and bodily vigour are so remarkable that it seemed that he was about to retire at the height of his career. Dr. Shepherd, however, reminded the members of Convocation that Dr. Gardner had occupied the chair for 27 years; and that he had occupied the chair of Medical Jurisprudence for eight years before that. Accordingly, he has served the University as professor for the long period of thirty-five years.

There is no use disguising the fact that Dr. Gardner's retirement is a serious loss to the Faculty and to the teaching of medicine, even though he has gathered about him a staff from which a competent successor can be selected. The fruit of his long experience will not entirely remain, though he has been sedulous all these years to bestow it upon his colleagues and upon his students. His passionless wisdom, his conscientious devotion to his task, his sure judgment in diagnosis, his sane decision upon questions of procedure, his humanity towards his patients both private and public, his rectitude of demeanour towards his colleagues, and the admiration and affection which he inspired in his friends—all this will find a safe abiding place in the high tradition of McGill University.

Dr. Gardner will be appointed Professor Emeritus, and with an increased leisure he will be more free to cultivate those exquisite tastes in art and literature with which his mind has always been graced. We may also hope that his services to this JOURNAL, of whose editorial board he is one of the oldest and most valued members, will be given as ungrdgingly for a long future as they have been given in a long past.

THE CANADIAN MEDICAL ASSOCIATION.

The forty-third annual meeting of the Canadian Medical Association was held in Toronto, June 1st, 2nd, 3rd and 4th. The sessions were held in the Convocation Hall of the University, Toronto. The meeting-place was so commodious that it was easy to make arrangements for the convenient assemblage of the various sections in close proxmity to each other.

The comfort which the members enjoyed in attending the various addresses, demonstrations, and symposia, the ease with which they discovered friends from distant places, and transacted their various professional and social engagements will make it extremely difficult in future to recognize the claims of small cities which desire to have the meetings held within their borders. The next meeting will be held in Montreal, where the accommodation which the new medical buildings of McGill University offers will still further accentuate the advantage which is possessed by the larger centres.

The attendance was large; 432 members were present, and they came from places so far apart as Prince Edward Island and British Columbia. Montreal was especially well represented, and demonstrated once more its fidelity to the Association.

If Canada is ever to take its proper place in the world, each Pro-

vince must sink its individual interest into proper relation with the interests of the whole. To that end these meetings are a great aid.

The President, Dr. Adam Wright, worked unsparingly for over a year. By the cords of affection he drew men to him, and contrived a meeting which for unanimity of opinion upon all matters pertaining to the good of the profession, and for friendliness of feeling between the members, has not been excelled in the long course of forty-three years. He had a loyal support from his colleagues in Toronto, both from those who are within the University and from those who are without.

A peculiarly pleasant feature of the meeting was the presence of past presidents and older members. Dr. Blanchard, from Winnipeg; Dr. Stewart, from Halifax; Dr. Macneil, from Summerside; Dr. Atherton, from Fredericton; Dr. Murray Maclaren, from St. John. Dr. Tunstall, from Victoria; Dr. Roddick, Dr. Bell, and Dr. Armstrong, from Montreal, demonstrated by their presence alone how deep and wide laid are the foundations of the Association.

The two Universities, Toronto and McGill, were represented by their Deans, Dr. Clarke and Dr. Shepherd; and the President of Toronto was there to give a formal welcome to the members. Dr. Reeve and Mr. Cameron, by public speech and private hospitality, showed that their interest in the Association is as vigorous as ever.

The success of the meeting was a tribute also to the capacity of Dr. George Elliott, who for so many years has served the Association at the cost of—no one knows but himself—how much labour. Dr. Elliott retired from the office of secretary, and his name will be held in remembrance so long as the Association endures.

Above all, we should mention with high commendation the closeness with which the programme as publicly announced was adhered to. At too many meetings readers are conspicuous by their absence, some unavoidably, but others, we fear, who allowed their names to be placed upon the list without the resolution to be present, at no matter what inconvenience to themselves.

At the morning session of June 1st, in the Section of Medicine, according to the official minutes which were furnished to us, only one reader was absent and two papers were "read by title." In the Section of Surgery one paper out of six was unread. On Wednesday morning, in Obstetrics, one member was absent, and of only one other paper is no mention made. The showing in Pathology, the same day, however, was particularly bad. Five papers out of nine went by default, and of twelve persons whose names appeared only

four were present. On Thursday morning, in the Section of Medicine, out of seven papers six were read, and in Surgery not one was missed; in Pathology and Obstetrics all were read by the writers and one by a substitute. The Section of Eye, Ear, Nose and Throat, had no delinquents. On Friday, in Medicine, four papers out of seven were read; and in Surgery there was only one omission out of six; in Obstetrics all the readers were present, and in Pathology all but two.

The Address in Medicine was of a high order, and Dr. W. P. Heringham, of London, maintained the reputation of his school for a scholarly and pains-taking presentation of the subject. The Address in Surgery by Dr. John B. Murphy, of Chicago, was listened to with much interest.

An important action of the Association was the final decision to establish a JOURNAL. The final arrangements were left with the Finance Committee, and we understand that they have certain proposals before them which will be considered immediately. So far as we can learn at present the JOURNAL will probably be edited in Montreal, and issued at the beginning of the year.

For the present year, Dr. G. E. Armstrong is President-elect, and Dr. E. W. Archibald, Secretary. Both of these officers are from Montreal where the next meeting will be held. Montreal is in the habit of doing these things well, and we feel quite sure that in 1911 no departure will be made from a good tradition.

MEDICAL EDUCATION IN AMERICA.

A great service has been rendered to medical education on this continent by the publication of a bulletin by the Carnegie Foundation for the Advancement of Teaching (No. 4) on "Medical Education in the United States and Canada," prepared by Mr. Abraham Flexner and others. In the vigorous introduction with which he prefaces a volume of some 350 pages, teeming with facts and figures, President Pritchett makes the interesting announcement that, "it is the purpose of the Foundation to proceed at once with a similar study of medical education in Great Britain, Germany, and France, in order that those charged with the reconstruction of medical education in America may profit by the experience of other countries."

The Carnegie Foundation has been in existence only five years, but ample proof is here afforded of its desire to impress its beneficent activity on a department of education which touches more nearly than any other both the individual and the community. For it may be well

said, in the words of the Bulletin, "In no other way does education more closely touch the individual than in the quality of medical training which the institutions of the country provide. Not only the personal well-being of each citizen, but national state and municipal sanitation rests upon the quality of the training which the medical graduate has received. The interest of the public is to have well-trained practitioners in sufficient numbers for the needs of society. The source whence these practitioners are to come is of far less consequence."

The gist of the whole argument is that there are too many medical schools, and that no public interest would suffer if many of them were discontinued or suppressed. With the great extension of the fundamental sciences on which medicine depends, the requirements of medical education have increased enormously, and much heavier demands are now made on both teachers and students in respect alike of preliminary and of professional training. Medical education, properly provided, has come to be the costliest of all. Scientifically trained physicians and surgeons, and specialists of every kind, are of greater importance even than able all-round practitioners, and it becomes a question whether better results could not be obtained by concentrating educational effort on fewer centres.

Accordingly, one of the most suggestive features of the report is the maps (pp. 152-3) showing (*a*) the actual and (*b*) the suggested number, location and distribution of medical schools in the United States and Canada. "Progress for the future would seem to require a very much smaller number of medical schools, better equipped and better conducted than our schools now as a rule are; and the needs of the public would equally require that we have fewer physicians graduated each year, but that these should be better educated and better trained."

This will seem to many a large argument, but the Bulletin fairly teems with reasons why it should be taken seriously. We are told, on page 14, that Professor Paulsen, describing in his book on the German Universities the increased importance of the medical profession, reports with some astonishment that the number of physicians has increased with great rapidity, so that there now is, in Germany, one doctor for every 2,000 persons, and in the large cities one for every 1,000." What would the amazed philosopher have said, asks Mr. Flexner, had he known that in the entire United States there is already on the average one doctor for every 568 persons, that in our large cities there is frequently one doctor for every 400 or less, that many small towns with less than 200 inhabitants each have two or three physicians apiece? It is something of a relief to be told elsewhere (p. 150) that "in Canada the existing ratio of physicians to population is 1:1030." The whole paper cannot

be adequately dealt with within the limits of a single article, and we shall consider here only the general aspect of the subject, especially in its bearing on Canada, leaving out of consideration for the present the very valuable parts of the Bulletin (Chaps. IV. to VII.) which deal with the course of study, in college and hospital.

The main source of trouble is the commercial medical school. No one can read the opening chapters of Mr. Abraham Flexner's carefully compiled report without feeling that he has put his finger on an evil which, however much it might be palliated or excused under by-gone conditions, cannot now be allowed to survive without grave prejudice to the public interest. "It is a singular fact," says President Pritchett, "that the organization of medical education in this country has hitherto been such as not only to commercialize the process of education itself, but also to obscure in the minds of the public any discrimination between the well-trained physician and the physician who has had no adequate training whatsoever. A vast army of men is admitted to the practice of medicine who are untrained in sciences fundamental to the professional and quite without a sufficient experience of disease. A right education of public opinion is one of the problems of future medical education" (p. X.).

As illustrating the instability of the type of school above referred to, the fact is recorded that in little more than a century the United States and Canada produced no fewer than 457 medical schools, "many, of course, short-lived, and perhaps 50 still-born." By a partial process of elimination this number has now been reduced to 155. The rest could not survive. "Nothing has perhaps done more to complete the discredit of commercialism than the fact that it has ceased to pay. It is but a short step from an annual deficit to the conclusion that the whole thing is wrong anyway." And the conclusion is drawn in these words: "It appears, then, that the country needs fewer and better doctors; and that the way to get them better is to produce fewer. To support all or most present schools at the higher level would be wasteful, even if it were not impracticable; for they cannot be manned. Some day, doubtless, posterity may re-establish a school in some place where a struggling enterprise ought now to be discontinued. Towards that remote contingency nothing will, however, be gained by prolonging the life of the existent institution" (pp. 17-18), Cp. p. 49.

In addition to an exhaustive statement of the features of an up-to-date medical curriculum, the Bulletin deals with such questions as entrance standards and the length of the course. In the United States the required curriculum, prior to practice, now covers four years. A hint of what may be expected from a comparison with European conditions

is given in a note on p. 104, quoted from the British Medical Journal, September 5, 1908, p. 634: In Germany five years must be spent at the University, a sixth in a hospital; in England "official statistics published recently under the authority of the General Medical Council show that the mean length of the curriculum in the case of 1,111 students investigated was three weeks less than seven years; only 14 per cent. succeeded in obtaining a qualification in the minimum period of five years, 35 per cent. obtained it in the sixth year, 18 per cent. in the seventh year, 13 per cent. in the eighth year. When the remaining 20 per cent. obtained it does not appear, probably never. Looking at the figures in another way, we find that at the end of six years less than half had obtained a qualification for registration, and at the end of seven years only two-thirds."

For American schools it is argued that five years of purely medical study have come to be indispensable. Against the suggested compromise of a five years' course, with the first year devoted to the fundamental sciences of physics, chemistry and biology, Mr. Flexner details the following objections: (1) A single year is insufficient for three laboratory sciences, and makes no provision for modern languages; (2) the day is coming when the medical school proper will want a fifth or hospital year, —a culmination that will be indefinitely postponed if the year in question is prefixed to the course and assigned to preliminary training; (3) The arrangement protracts our present educational disorganization: it proposes that the medical school should do the work of the college (pp. 47-8).

The length of the course obviously hangs by the question of entrance qualifications, and the Bulletin is full of scathing condemnation of those institutions that ask for "little or nothing more than the rudiments or the recollection of a common school education." McGill and Toronto are commended under this head (though neither of them as yet requires two years of college work for entrance), on the ground of the control exercised by the University authorities over admission to their medical departments.

Those who have been watching the development of a "closer union" between the University and its medical school, will learn from the Carnegie Bulletin that what has recently been brought to pass in Montreal took place long ago in the United States. "The first step towards depriving the medical school of virtual autonomy was taken when the University undertook to collect the fees and thenceforward to administer the finances of the department by means of an annual budget. This took place at Harvard in 1871, at Yale in 1880, at the University of Pennsylvania in 1896" (p. 8, note). "Early in the seventies the new

president of Harvard College startled the bewildered faculty of its medical school into the first of a series of reforms that began with the grading of the existing course and ended in 1901 with the requirement of an academic degree for admission. In the process, the University obtained the same sort of control over the medical department that it exercises elsewhere. Towards this consummation President Elliott had aimed from the start" (p. 12). On the modern movement towards the identification of the Medical School and the University the following recent papers are important: The Obligations of the University to Medical Education, by President Pritchett, in the Journal of the American Medical Association, April 2, 1910: vol LIV., pp. 1109-1114; The Relation of the University to the School of Medicine, ibid, April 16, 1910, pp. 1281-1284.

In other respects also our Canadian medical schools, with McGill and Toronto always at their head, come in for very considerable commendation. "It is important that our universities realize that medical education is a serious and costly venture; and that they should reject or terminate all connection with a medical school unless prepared to foot its bills and to pitch its instruction on a university plane. In Canada conditions have never become so badly demoralized as in the United States. There the best features of English clinical teaching have never been wholly forgotten" (p. 13). "The graduates of McGill and Toronto have passed through a scientific and clinical discipline of high quality" (p. 15). Special praise is accorded to the "great anatomical and pathological museum at McGill" (p. 82). For more extended quotation the following passage is of interest (pp. 78-9). "Of schools of this type two Canadian institutions—McGill and Toronto—deserve special attention. In point of laboratory equipment they equal Minnesota and Michigan; their lower entrance requirement, minimized by conscientious adherence to a strict interpretation of their announced standards, is now compensated by the addition of a fifth year to the curriculum.

At Toronto the teaching is wholly in charge of full time instructors, for whose original work splendid provision has been made in laboratories of ideal construction and admirable equipment. Mc Gill is in respect to full-time teachers somewhat less fortunate; but its great museum, recently much damaged by fire, proves that genuine enthusiasm may succeed contrary to all the established rules of the game. In both institutions the shortcomings of the student body, instead of excusing perfunctory work, have rather been regarded as an obstacle to be overcome, a condition to be met. The students have had little high school science, all the more reason, then, to provide excellent laboratories, skilful teachers, abundant assistants. In keeping with effective performance are their

modesty and candour. The number of greatest anatomists and greatest pathologists teaching on small salaries in obscure places in the United States, and of laboratories as good as Johns Hopkins is nothing less than staggering. Nor is a boastful pride in mediocrity lacking even in institutions of some real merit. At Toronto and McGill one hears in the medical school no such bravado. There they deprecate the defects, which they hasten to show for fear they may escape notice. The absence of competition—be it business competition between schools conducted for profit, or academic competition between endowed or tax-supported institutions, made to "make a showing"—may, perhaps, be responsible for their more guarded utterance and more assured ideals."

Carefully arranged statistics of all medical schools in America are provided in an appendix (Canada pp. 320-326).

Recurring to the general argument so exhaustively set forth in the Bulletin, we may best enforce its main drift and tendency by quoting again from President Pritchett's Introduction (pp. x-xi): "The significant facts revealed by this study are these:

(1) For twenty-five years past there has been an enormous overproduction of uneducated and ill-trained medical practitioners. This has been in absolute disregard of the public welfare and without any serious thought of the interests of the public. Taking the United States, as a whole, physicians are four or five times as numerous in proportion to population as in older countries like Germany.

(2) Over production of ill-trained men is due in the main to the existence of a very large number of commercial schools, sustained in many cases by advertising methods through which a mass of unprepared youth is drawn out of industrial occupations into the study of medicine.

(3) Until recently the conduct of a medical school was a profitable business, for methods of instruction were mainly didactic. As the need for laboratories has become more keenly felt, the expenses of an efficient medical school have been greatly increased. The inadequacy of many of these schools may be judged from the fact that nearly half of all our medical schools have incomes below $10,000, and these incomes determine the quality of instruction that they can and do offer.

Colleges and universities have in large measure failed in the past twenty-five years to appreciate the great advance in medical education and the increased cost of teaching it along modern lines. Many universities desirous of apparent educational completeness have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support."

THE CANADA MEDICAL ACT.

The cause of Dominion Registration was advanced another step at the recent meeting of the Canadian Medical Association, in Toronto. The Amendments to the Canada Medical Act suggested by the Committee representing the Provinces, which met Dr. Roddick in November last, were unanimously adopted at one of the general sessions of the Association.

The Bill now gives two representatives to each of the Provinces, to be elected under regulations to be made by the Provincial Medical Councils. The larger Provinces, be it said to their credit, gave way on this difficult question so that the little Island of Prince Edward will now have the same representation on the Dominion Council as the large Province of Ontario. On the other hand the universities will increase the representation of Manitoba, Ontario, Quebec, and Nova Scotia. All told the Dominion Council will now have a membership of thirty-one.

It was decided that every candidate for the Dominion license must either have a Provincial License, or must present a certificate from the Registrar of his own Provincial Medical Council that he holds a medical degree accepted, and approved of, by the Medical Council of said Province.

The terms of the Retroactive Clause already referred to in these pages, were adhered to, namely, that after ten years any practitioner in good standing may claim a Dominion License without examination. But it shall be competent for the Medical Council of any Province, not satisfied with the period of years prescribed to exact from practitioners an examination in the final subjects only. It is not expected that all the provinces will avail themselves of this provision, although it was thought well to have such a safe-guard in the event of a stampede towards any province.

The Reciprocity Clauses in the Original Bill were all expunged, being really unnecessary since the passage of the Laurie Amendment to the British Medical Act, which provides that any Province may, through its Legislature, when so minded arrange a scheme of reciprocity with the British Medical Council.

The Amended Bill will be submitted to the Dominion Parliament at its next session and will come into force just as soon as all the Provinces shall have secured their enabling clause from their respective legislatures.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

It is not, perhaps, generally known and recognized that the Federal

Government, debarred, as it holds itself from actively taking part in the prevention of disease in man, by the British North America Act, save in the matter of the supervision of the health of immigrants, has nevertheless for several years past supported and in fact borne the whole expenses of the National Association for the Prevention of Tuberculosis, affording this year a grant of $10,000 annually to that body. The object of the Association is to bring together all throughout the Dominion interested in the arrest of Tuberculosis,—the Provincial and Municipal Boards of Health, the Provincial Anti-tuberculosis Associations, municipal leagues, and private corporations, which have established dispensaries, sanatoriums, and hospitals for the cure of the consumptive and by the annual assemblage of delegates from these various bodies to keep the one in touch with what the other is accomplishing, and thereby to induce a generous emulation between the various provinces and municipalities. The central office, in Ottawa, forms a centre for information and for the publication of campaign literature. Until last year the annual meetings were held in Ottawa; last year the policy was embarked upon of stimulating local effort by holding the annual meetings in different centres. Hamilton, with its admirable sanatorium just established on the outskirts of the city, was chosen for the first of these peripatetic meetings; this June the Royal Edward Institute invited the Association to meet here in Montreal; the Hon. Adam Beck conveyed an invitation that next year's meeting be held in London, where but a few weeks ago as the result of an enthusiastic campaign there was opened what is, perhaps, the most conveniently and beautifully situated and equipped sanatorium and hospital yet established in Canada.

The main feature of the late meeting was the evidence afforded from one end of the Dominion to the other of active progress. Ontario takes the lead with its Government grant of $4,000 towards the erection of sanatoria and hospitals in any county, and of a capitation fee of $4.50 per patient in those institutions. As a result, Ottawa has just built and opened the Lady Grey Hospital of thirty beds, Hamilton has both the Mountain Sanatorium for thirty patients, and the Southam Hospital for Incurables, London, has its combined hospital, sanatorium and farm for an equal or greater number of patients, St. Catharines, Guelph and Brockville are following the lead, and will shortly be fully equipped. Toronto has established a league similar to ours in Montreal, and has brought together its various agencies, which report increased activity. There the Heather Club working in connexion with the Children's Hospital besides employing visiting nurses, is the first body in Canada to establish an open air school for tuberculous and scrofulous children.

British Columbia reports a complete organization, under the leadership of Dr. E. T. Fagan, with some forty local associations throughout the Province, and the completion of a central sanatorium and hospital at Tranquille, near Kamloops, with accommodation for fifty patients, and a farm of several hundred acres which will employ a large number of convalesced patients. Saskatchewan, under the active direction of Dr. Seymour, head of the Health Department, has during the last few months established twenty local associations and is about to build a provincial sanatorium. All the Western Provinces,it may be noted, receive Government support per capita for the care of cases of tuberculosis in connexion with the general hospitals. The same enthusiastic reports of active progress were received from province after province in succession, so much so that Canada should be a formidable candidate next year, for the prize given at each successive meeting of the International Tuberculosis Congress for the country that has made the greatest progress during the last three years.

Reference must be made to the admirable and practical address delivered by General Sternberg, late head of the U. S. Army Medical Department upon the housing of artisans in relationship to the spread of tuberculosis. General Sternberg is the head of two organizations in Washington which during the last twelve years have built three hundred houses, each housing two families in from three to five rooms, each family being provided with a bath and range with hot and cold water, the shareholders being guaranteed 5 per cent., and the popularity of these cottages having led to some thousand other cottages of the same type being erected by private individuals. There is a wide opening for associations of this type in Montreal.

At Laval University, Drs. Rousseau, Bourgeois and Dubé gave admirable addresses bearing upon the progress made in Quebec, Three Rivers, and Montreal, respectively; Dr. Dubé especially discussing the movement to improve the milk supply. More immediately bearing upon the treatment of tuberculosis was an excellent discussion opened by Dr. Harding upon dispensary methods and a demonstration by Dr. Campbell Howard upon the "Class Method" that excited great interest.

Medical News.

FORTY-THIRD ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION.

TORONTO, JUNE 1ST, 2ND, 3RD AND 4TH, 1910.

SUMMARY OF PROGRAMME.

Wednesday, June 1st.—Morning session.

SECTION OF MEDICINE.

1. *Treatment of Acne Vulgaris by Vaccines.*—George W. Ross, Toronto. Discussion opened by D. King Smith, Toronto.

2. *Diphtheria.*—A. H. Gordon, Montreal. Discussion opened by A. R. Gordon, Toronto.

3. *The Psycho-Neuroses.—Psycho-Analysis.*—J. J. Putnam, Boston; August Hoch, New York. *In Asylum Practice.*—W. H. Hattie, Halifax. *General Significance.*—Ernest Jones, Toronto. Discussion opened by C. K. Clarke, Toronto.

4. *Radium Therapy.*—W. H. B. Aikins, Toronto, read by title.

5. *Some Unusual Symptoms of Exophthalmic Goitre.*—F. P. White, Shelburne, read by title.

SECTION OF SURGERY.

1. *Tumor of Cerebrum (with patient).*—Geo. Bingham, Toronto. Discussion opened by James Bell, Montreal.

2. *The Operative Treatment of Congenital Hydrocephalus.*—Edward Archibald, Montreal. Discussion opened by B. Z. Miller, Toronto.

3. *Perforation of the Intestines in Typhoid Fever.*—G. E. Armstrong, Montreal. Discussion opened by Ingersoll Olmsted, Hamilton.

4. *Tuberculous Invasion of Voluntary Muscle.*—A. Primrose, Toronto.

4. *A Case of Diaphragmatic Hernia.*—J. M. Cotton, Toronto.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

1. *A Case of Pregnancy Complicated by large Fibromyoma of the Uterus, Caesarian Section, Myomectomy.*—W. J. Hunter Emory, Toronto, Ont.

2. *Prenatal Influences.*—Jennie Gray, Toronto, Ont.

3. *The Obstetrical Technique, the Management of Labor, Methods, etc.*—J. G. Bogart, Kingston, Ont.

SECTION OF PATHOLOGY.

1. *A Study of the Pathological Findings in Eighty Cases of Acute Pericarditis.*—Joseph Kaufmann and Raymond Landry, Montreal, Que. This was presented by W. F. Hamilton, Montreal, Que.

2. *A Teratoma of the Testicle.*—A. B. Atherton, Fredericton, N.B.

3. *Rabies.*—J. A. Amyot, Toronto, Ont.

4. *The Actions of Drugs on the Salivary and Bronchial Secretions.*—A. H. Taylor and V. E. Henderson, Toronto, Ont.

GENERAL SESSION, JUNE 1ST.

1. Chair taken by the retiring President, R. J. Blanchard, Winnipeg.

2. *Invocation.*—R. A. Falconer, LL.D., etc., President, University of Toronto.

3. *Induction of President Elect.*—Dr. Adam H. Wright, Toronto.

4. *Address of Welcome.*—His Honor, the Lieut.-Governor of Ontario.

5. *Address of Welcome.*—His Worship, the Mayor of Toronto.

6. *Address of President.*—Adam H. Wright, Toronto.

7. *General business.*

8. *Report of Milk Commission.*—Charles J. C. O. Hastings, Toronto. *The Municipality and Its Milk Supply.*—H. A. Evans, Commissioner of Health, Chicago. *A Pure Milk Supply.*—Charles E. North, New York. *Discussion.*—Opened by A. McGill, Ottawa, Ont., Dominion Analyst; J. G. Rutherford, Veterinary Director General, Ottawa, Ont.; Hon. H. E. Young, Provincial Secretary, Victoria.

GENERAL SESSION, JUNE 1ST—EVENING.

1. *Address in Medicine.*—W. P. Heringham, London, England.

2. *Discussion on Dominion Registration.*—Opened by T. G. Roddick, Montreal.

3. *Annual Executive Session of the Ontario Medical Association.*—The President, H. R. Casgrain, Windsor, in the Chair.

Thursday, June 2nd.

SECTION OF MEDICINE.

1. *Diagnostic and Prognostic Importance of Sensory Phenomena in Progressive Pernicious Anaemia.*—Hugh McCallum, London. Discussion opened by W. B. Thistle, Toronto.

2. *Pernicious Anaemia.*—C. F. Martin, Montreal. Discussion opened by H. C. Parsons, Toronto.

3. *Psycho-Neuroses from the Standpoint of the Neurologist.*—Joseph Collins, New York. Discussion opened by D. C. Meyers.

4. *Levulosuria and its Significance in the Diagnosis of Hepatic Conditions.*—W. F. Hamilton, Montreal.

5. *Pneumococcic Arthritis.*—D. McCordick, Montreal. Discussion opened by J. T. Fotheringham.

6. *Tuberculosis of the Mediastinal Glands.*—Harold C. Parsons, Toronto.

Section of Surgery.

1. *Omental Cysts.*—Murray MacLaren, St. John, N.B.

2. *Appendicitis in Children.*—I. Wood, Kingston, Ont. Discussion opened by C. B. Shuttleworth, Toronto, Ont.

3. *Duodeno-choledochotomy, with Report of a Case.*—Jaspar Halpenny, Winnipeg, Man. Discussion opened by J. M. Elder, Montreal, Que.

4. *Acute Intestinal Obstruction, with special reference to some experimental work on the secretions of the upper intestines.*—Hugh McKenna, Chicago.

5. *A Case of Renal Calculus with Nephrectomy.*—W. Warner Jones, Toronto, Ont. Discussion opened by Samuel Cummings, Toronto.

6. *A Case of Obstruction of Bowels due to Torsion of the Caecum and Ascending Colon.*—Ingersoll Olmsted, Hamilton, Ont.

7. *Exomphalos.*—M. R. Blake, Winnipeg, Man.

Thursday, June 2nd.

Section of Obstetrics and Gynecology.

In Conjunction with Section of Pediatrics.

1. *The Causation and Early Diagnosis of Uterine Cancer.*—A. C. Hendrick, Toronto.

2. *Pyelitis in Pregnancy—Cystoscopic Diagnosis, with report of cases.*—Ellice MacDonald, New York.

3. *Cystitis following Operations.*—F. A. Cleland, Toronto. Read by Dr. Lytle.

4. *Pericarditis in Children with Demonstration by X-Ray Photographs.*—Joseph S. Graham, Toronto.

Section of Pathology.

1. *The Noguchi Method of Serum Diagnosis of Syphilis. Its Practical Value.*—Daisy M. Orleman Robinson, New York.

2. *The Wasserman Reaction from a Laboratory and Practical Standpoint.*—F. S. Patch and R. P. Campbell, Montreal.

3. A *Critique of the Wasserman Reaction and Its Modifications.*—J. G. Fitzgerald, Toronto.

4. *Immunilogical Procedures and Their Value in Pulmonary Tuberculosis.*—A. H. Caulfield and J. C. Beattie, Gravenhurst, Ont.

6. *A Complement Deviation in Pulmonary Tuberculosis.*—A. H. Caulfield and J. C. Beattie, Gravenhurst, Ont.

7. *Further Observations on a New Tuberculin Skin Test.*—Sydney Pierce, Winnipeg.

8. *The Clinical Estimation of the Coagulation of the Blood.*—R. D. Rudolf, Toronto.

Section of Eye, Ear, Nose and Throat.

1. Symposium: The Neurasthenic Conditions referable to the Eye, Ear, Nose and Throat.

(a) *The Eye.*—R. S. Minnes, Ottawa, Ont.

(b) *The Ear.*—D. J. Gibb Wishart, Toronto, Ont.

(c) *The Nose and Throat.*—W. H. Jamieson, Montreal, Que. Discussion opened by J. P. Morton, Hamilton, Ont.

2. *The Diseased Tonsil.*—(a) *Its effect upon the general system*—W. P. Caven, Toronto, Ont. (b) *Its surgical treatment.*—J. G. Sutherland, St. Catharines, Ont. Discussion led by Price Brown, Toronto, Ont.

3. *Trachoma.*—H. S. McKee, Montreal. Read by E. H. White. Discussion opened by J. D. Page, Quebec.

4. *Nasal Polypi.*—C. C. McCullough, Fort William, Ont. Discussion opened by Geoffrey Boyd, Toronto.

5. *Mastoid Disease in Infants. Parinaud's Conjunctivitis.*—G. D. Mathewson, Montreal.

6. *Reflex Nasal Neuroses.—Asthma, Hay Fever, Paroxyzmal Sneezing.*—C. M. Stewart, Toronto. Discussion opened by F. J. R. Forster, Stratford, Ont.

7. *A Case of Antral Disease with Serous Exudate* (*Sinusitis Serosa*).—E. Hamilton White, Montreal.

8. *Case Report*: *Benign New Growths of the Nasal Septum*—H. D. Hamilton, Montreal.

Afternoon.

The members of the Association and ladies went to Niagara Falls as the guests of the Toronto members.

Friday, June 3rd.

Section of Medicine.

1. *Tuberculin in Pulmonary Tuberculosis.*—J. H. Elliott, Toronto. Discussion opened by Charles Parfitt, Gravenhurst.

2. *The Blood in Pulmonary Tuberculosis.*—A. F. Miller, Kentville. In collaboration with L. Brown and J. S. Lupton, Saranac Lake.

3. *Orthostatic Albuminuria.*—Graham Chambers, Toronto.

4. *Sudden Attacks of Pain in the Pyloric Region.*—Goldwin Howland, Toronto.

Section of Surgery.

1. *Case Reports showing the Difficulties of the Diagnosis between Tuberculosis of the Lower Vertebrae and Hip Disease.*—A. McKenzie Forbes, Montreal. Discussion opened by Clarence L. Starr, Toronto. Toronto.

2. *Fractures about the Elbow Joint.*—W. E. Gallie, Toronto.

3. *Regeneration of Shaft of Tibia following Extensive Osteomyelitis.* —Alex. Hutchison, Montreal. Discussion opened by John Stewart, Halifax.

4. *Experimental Intra-thoracic Surgery.*—E. M. Von Eberts, Montreal.

5. *Complications of Recurrent Carcinoma of the Breast.*—J. M. Elder, Montreal.

Section of Obstetrics and Gynæcology.

1. *Demonstrations of Occipito Posterior Positions with a Model.*—J. R. McCabe, Strathroy.

2. *Ectopic Pregnancy.*—W. W. Chipman, Montreal.

3. *The Physical Examination of the Ante-Partum, and Post-Partum Patient with use of the Pelvimeter.*—Herbert M. Little, Montreal.

4. *The Immediate Repair of the Cervix and the Preliminary Placing of the Suture in the Perineum.*—A. Lapthorn Smith, Montreal.

5. *Placenta Praevia.*—F. Fenton, Toronto.

Section of Pathology

1. *Concerning the Development of the Spirochaeta Duttoni.*— J. L. Todd, Montreal.

2. *The Bacteriology of Acne Vulgaris.*—George W. Ross, Toronto.

3. *Trachoma Bodies.*—W. H. Lowry, Toronto.

4. *The Estimation of Nitrogen and Ammonia in Urine.*—J. B. Leathes, Toronto.

5. *The Occurrence of a Fat-splitting Ferment in the Urine in Cases of Pancreatitis.*—Edward Archibald, Montreal.

6. *The Clinical Estimation of Faeces.*—F. W. Rolf, Toronto.

7. *The Action of the Glomeruli of the Kidney.*—T. G. Brodie, Toronto.

General Session.

1. *Address in Surgery.*—The Surgery of the Joints—John B. Murphy, Chicago.

2. *Symposium on Exophthalmic Goitre.*—The Medical Aspect—Alex. McPhedran, Toronto. The Surgical Aspect—F. J. Shepherd. Montreal. The Pathological Aspect—S. P. Beebe, New York.

3. *Annual Meeting Canadian Medical Protective Association.*—The President, Dr. R. W. Powell, of Ottawa, in the Chair.

General Session—Evening.

1. *Address in Gynaecology.*—The Old and New Gynæcology—Henry C. Coe, New York.

2. *Medical Education.*—A comparison of the Conditions of Twenty-five Years ago with those of the Present. A suggestion for the Organization within the Association of a Permanent Committee on Medical Education—J. C. Connell, Kingston.

3. *Medical Inspection of Immigrants.*—J. D. Pagé, Quebec.

Saturday, June 4th.

General Session.

General Business.—The members of the Association, with their ladies, went to Guelph as the guests of the profession of that city, and of the President and staff of the Agricultural College.

McGILL MEDICAL CONVOCATION.

The 78th Annual Convocation for conferring Degrees in Medicine and Dentistry was held in the Royal Victoria College, Thursday, June 9th, 1910.

The Principal presided; and of the Governing Body E. B. Greenshields, LL.D., was present. Members of the Faculty, of the Staff, and of Convocation to the number of 53 were in attendance, and the Hall was quite filled by undergraduates and the public.

The following Honour List was presented:—

Fourth Year.—Holmes' Gold Medal for highest aggregate in all subjects forming the Medical Curriculum, T. A. Robinson, St. Mary's. Final Prize, for highest aggregate in the Fourth Year Subjects, H. Macmillan, Victoria. Wood Gold Medal, for best examination in all the Clinical Branches, Sidney B. Peele, New Westminster. Woodruff Gold Medal, for special examination in Ophthalmology and Oto-Laryngology, Sidney B. Peele, New Westminster. McGill Medical Society Senior Prize, D. M. Brown, Motherwell, Scotland.

Third Year.—Third Year Prizeman, F. H. Mackay, Mount Stewart, P.E.I. Sutherland Medallist, D. S. Lewis, M.Sc., Montreal. Joseph Hils Prize, C. D. Hamilton, Cornwall. Morley Drake Prize, F. H. Mackay, Mount Stewart, P.E.I. McGill Medical Society Junior Prize, E. H. Falconer, Prentice, Wis.

Second Year.—Second Year Prizeman, A. L. Jones, Victoria. Senior Anatomy Prize, W. G. Morris, Regina.

First Year.—First Year Prizeman, C. R. Joyce, Woodstock. Junior Anatomy Prize, C. R. Joyce, Woodstock.

The Degree of M.D., C.M., was conferred on the persons, 79 in unmber, whose names follow, alphabetically arranged:—Allen, John Anson Lorne; Allen, Kenneth Watson; Allingham, John Heber, B.A.; Amant, Harry; Anderson, William Marcus; Baldwin, William James; Benner, Frank Aubrey; Black, Vaughan Elderkin, B.A.; Booth, Gordon Elliott; Boudreau, Frank George; Brown, David MacCulloch; Burton, William Elliott; Carruthers, Robert Sim Patterson; Champion, Benjamin Hiram; Chisholm, Hugh Gillis, B.A.; Crease, Arthur Lionel; Culver, Cyrus Whitney; Dakin, Warren Augustus, M.A.; Doyle, Philip Ernest; Dunbar, David Archibald; Dunnet, Henry Watters; Elliott, Robert, B.A.; Ewert, Carl, B.A.; Fraser, John Roger; Fraser, Wilbert Grieve; Froomess, Leo E.; Gallagher, Joseph Bernard, B.A.; Gillis, Stephen Herbert; Gilmour, William Norman; Graves, Charles Allan; Hepburn, Howard Havelock; Hepburn, William Graham; Herbert, Thomas Archibald; Hicks, Elbert, Roy, B.A.; Hutchinson, George Wellington; Keay, Arnold; Lavers, Percy Lorne; Locke, J. Allan; Lockwood, Ambrose Lorne; Logie, H. Burton, B.A.; McAlister, William Jonas; Macaulay, Albert Edward; McBurney, Albert, B.A.; McCracken, William Alexander; McEachren, Malcolm Thomas; Mackintosh, Arthur Emerson; MacMillan, Hugh; MacMillan, Stanley; McNaughton, Murray William Armour; MacNeill, Alvin Lennox Hodge; MacPhee, John Adolphus, B.A.; Malcolm, Robert Bruce; Marchant, Harold Bertram; Moodie, Alex. Russell; Morse, David Garnet; Mundie, Gordon Stewart, B.A.; O'Brien, John Francis; O'Callaghan, Robert Hay Lismore; Park, John

Edmistone; Patten, Lee Alfred; Peabody, Harry Sherman; Peele, Sidney Beresford; Piper, John Obed, A.B.; Raphael, Howard MacLaren; Reed, Everett Hobart; Richardson, James Wilson; Robinson, Thomas Arnold; Scott, George Orville; Shephard, Harold Middleton; Shillington, Richard Newton Wellington; Sihler, George Albert; Sinclair, Fred Douglas, B.A.; Speer, Robert Brandon; Stewart, Archibald; Strudwick, Henry Thompson; Turner, John Smicle; Walker, Edmund Eugene Watlington; Wilson, George Thomas, B.A.; Youland, William Edward, A. B.

The Valedictory by the graduates was given by Dr. Thomas A. Robinson. Prof. T. Wesley Mills replied on behalf of the Faculty. Dr. Mills was then presented with an address accompanied by a gift from members of the Faculty and of the teaching staff, to which he made a suitable reply. The honorary degree of M.D., C.M. was conferred upon Dr. Maude Abbott, M.D. (Bishop's); and degrees *in absentia* were conferred upon William E. Fairfield, M.D.; Hyman Lightstone, M.D.; Douglas Dalzell Macrae, M.D.; Samuel W. Outwater, M.D.

Dr. F. J. Shepherd, Dean of the Faculty gave the sessional address, which was as follows:—

The total number of students registered in the Faculty of Medicine for the past session was 332, made up as follows:—

First year	81
Second Year	61
Second Year (four year course)	12
Third Year	39
Third Year (four year course)	26
Fourth Year	89
Total	312

In the Dental Department there were:—

First Year	6
Second Year	4
Third Year	3
Fourth Year	4
Total	17
Graduates in attendance, D.P.H. Course	3

Making a grand total of 332.

The students come from the following provinces:—

Ontario	79
Quebec	67
New Brunswick	26
Prince Edward Island	19
United States	40
West Indies	18
Newfoundland	4
Nova Scotia and Cape Breton	21
British Columbia	38
Manitoba	5
Alberta and Saskatchewan	9
Scotland	1
England	1
British Guiana	4
Total	332

The seventy-eighth session of the Faculty of Medicine closes to-day with the graduation of seventy-nine men. This is really the 81st year since the union of the old Montreal Medical Institute with McGill University, for during the Rebellion of '36, '37 and '38 no sessions were held. This year is memorable as being the last one with a graduating class having a four year course.

It was arranged that this year should close with the opening of our medical buildings on Pine Avenue and University Streets, but the sudden and lamented death of our most gracious Sovereign, King Edward VII prevented this; for His Excellency, the Governor-General could not be present, and it was thought better to postpone the opening, as well as the Reunion of Graduates, until next year,—this had the approval of Lord Strathcona and the College authorities. Next year we hope to have a reunion of all our graduates as well as the official opening of the new buildings for by that time the West Wing (already commenced) will be finished and we shall celebrate the opening of a completed building and have so much the more to show our graduates.

Besides, the Museum and Library will then be in order and our graduates will have a much better idea of the great importance of these two magnificent departments. Last year at the Convocation we were hoping that some kind friend would give us enough to build the Museum the plans of which were already arranged for, and an appeal was made for more money for this purpose. In July last the Principal saw Lord Strathcona, in London, with the result that he gave us $450,000 to com-

plete the buildings and $50,000 to augment professors' salaries. This most munificent gift was accepted with gratitude and joy. To Lord Strathcona we owe much. He has ever come forward to help us in our difficulties and tided us over many a serious trouble. Now not only are we able to have a great museum, but we are also able to complete the building by adding the West Wing so that the symmetry of this splendid structure will not be spoilt.

I have to report that the Dental Department is in a very flourishing condition and this is due to the generosity of the Montreal General Hospital which established a dental clinic at considerable expense. Now we can educate English dentists and give them as great facilities for acquiring a practical knowledge of their profession as they can get in larger centres in the United States. Dr. J. Ibbotson has been appointed Director of this clinic. Not only is this clinic of benefit to students, but it is a great boon to the poor who can have free of charge the best advice and treatment the city can give. During the past winter the children in the various Protestant Institutions have had their teeth attended to with great benefit to their general health.

The Department of Public Health still continues to prosper and this year sends forth three diplomates thoroughly trained in the practical work of that Department.

This Convocation is also made memorable by the giving of an hororary degree to Miss Maude Abbott for her most excellent work in connection with the Museum and also her investigations and research in the little known field of anomalies of the heart. She is the first woman to hold the degree of M.D., C.M. from McGill.

I have now to speak of the resignations which have taken place since we last met. First, Professor Wesley Mills, after a prolonged illness resumed his work last October, but he found he was unable to do justice to his Chair without imperilling his own health, so decided to resign. This resignation was accepted with regret by his colleagues with whom he had worked so long and by whom he was so much appreciated. The address to be presented to-day will express the views of the Faculty towards him so that I need say no more in appreciation of Professor Mills —we wish him God speed wherever he goes.

Professor William Gardner, our senior professor, has intimated to the Faculty his desire to resign from the chair of Gynæcology which he has held since 1883. Previous to this for eight years, 1875 to 1883, Dr. Gardner held the chair of Medical Jurisprudence with satisfaction to the Faculty and the students. In 1883 Gynæcology was separated from Obstetrics and a special chair established to which Dr. Gardner was ap-

pointed; he has held the chair most satisfactorily for 27 years and now wishes to be relieved of the onerous duties incumbent on this position. Every Canadian graduate knows the splendid work Dr. Gardner has done in his department and how much he has advanced the knowledge of his subject in Canada. We all know how careful and accurate he is in diagnosis, how calm and certain in operation, with what sound judgment he gives counsel to his colleagues and how strongly his work is impressed on his students, teaching them to be conservative in a department of surgery which has suffered many things from many indiscreet and so-called progressive surgeons. We regret exceedingly to have to accept the resignation of Dr. Gardner, but he will be still with us and of us for a Professoriate Emeritus will be awarded him.

Professor J. G. McCarthy has also severed his connection with the Faculty in spite of many requests to withdraw his resignation. Professor McCarthy during the past year has been teaching Medical and Surgical Anatomy, previously he was Assistant Professor in Anatomy. Dr. McCarthy has given many of his best years in the service of the College for very little reward and is known to many classes of students as an excellent teacher and organizer and a competent anatomist who has done much to simplify the teaching of that difficult subject and to systematize the practical work. All the students loved him and we all sincerely regret the loss we are sustaining in his resignation.

We accept with regret also the resignation of Dr. W. S. Morrow, Assistant Professor of Physiology, who has done us such yeoman service in the past, and who has during the absence or illness of Professor Mills carried on the duties of the Chair with entire satisfaction. The University is under great obligations to Professor Morrow for having for so many years worked so loyally and with such inadequate recompense; he sacrificed his time, energy and ability on the altar of Science. We regret that the allurements of practice and clinical investigations draw him away from a subject he so long adorned.

Dr. Oskar Klotz, lecturer in Pathology and Bacteriology and pathologist to the Royal Victoria Hospital, by his original work here acquired a continental reputation and when the medical school at Pittsburg was reorganized he was called to the professorship of pathology, a great compliment to him and to us,—although we regret his loss we rejoice in his promotion.

Dr. S. B. Wolbach, who has been lecturer in Histology and Pathology and pathologist to the Montreal General Hospital and whose example has been so stimulating to all who have come in contact with him, has resigned to accept a more distinguished position at Harvard University

in Boston. Dr. Wolbach came here with a reputation of being a progressive and original worker in his subject. He leaves us with that reputation enhanced by his excellent work here and we part with him very reluctantly. May he in his new position continue to increase an already great reputation.

We have also to welcome amongst us for the next session the new professor of zoology, Dr. Willy. He comes to us with a brilliant record of work done and we hope he will be a strong man in his department.

We have also to welcome among our new professors, Associate Professor J. C. Simpson, who takes up the work connected with the department of Embryology and Histology. Professor Simpson's past record leads us to believe that he will do excellently well in this work for he has a reputation as a teacher, expositor and investigator.

In the Dental Department Geo. S. Cameron has been appointed Professor of Prosthetic Dentistry.

Now, I must say a few words in parting to the graduating class. I congratulate you all on having successfully overcome the many obstacles and difficulties which you have met on the road to your degree, but remember that you are only at the commencement of your journey. Some students imagine that the getting of the degree ends the hard work,—on the contrary—you do not know what real work is and it is only when you have the responsibilities of practice that you will realize what a pleasant time your college years were. If you work honestly and steadily at your profession you will be sure to succeed. Be true to yourselves and you will be true to your Alma Mater, who is always watching your successes and failures, rejoicing in your successes and sympathizing in your failures. To encourage you hear what Carlyle says in writing his brother, a doctor:

"It is a noble thing to have a profession in the end; it makes a man independent of all mortals. He is richer than a lord, for no external change can destroy the possession he has acquired for himself."

Be of good cheer therefore and make up your minds to succeed; you cannot all be great physicians, but you can be good ones; work not for money, but for the love of your profession and you will have your reward. The Faculty wishes you every prosperity in your future career. Farewell.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The fifteenth regular meeting of the Society was held Friday evening, May 6th, 1910, Dr. W. Grant Stewart, President, in the Chair.

(a) CASE OF CEASAREAN SECTION IN A GIRL OF FOURTEEN YEARS. (b) ELEPHANTIASIS.

H. L. Reddy, M.D.

W. Grant Stewart, M.D.—I would like to ask Dr. Reddy in what cases he would consider Cæsarean section indicated. At Bumm's clinic, in Berlin, I did not see any Cæsarean sections, but I saw quite a number of vaginal sections. Of course, there are cases where the vaginal Cæsarean section would not be indicated at all.

I would also like to ask if Dr. Reddy has followed up his cases operated on and what has been the result, that is if the patients have made a perfect recovery.

H. L. Reddy, M.D.—It is rather difficult to lay down a hard and fast rule for performing such an operation. I did a case not long ago where the cervix was not taken up and the os was like iron. The patient went home on the 14th day well. I did another in a case of central placenta prævia and she made an uneventful recovery; also eclampsia. If the head will not go through the pelvis without great difficulty, I think you are perfectly justified in performing the operation, or again if you are going to do so much damage to the woman that it may be a grave case to handle afterwards the balance is in favour of section. It is very difficult to lay down any rule, however. In accouchement forcé the tearing is such that very often a good recovery is not made and you get cicatricial tissue often with involvement of nerves and the woman is more or less damaged and in many cases Cæsarean section would be better. As regards vaginal Cæsarean section it does not appeal to me at all. An operation should, as far as possible, be one that a man of ordinary intelligence should on occasion be able to perform with the smallest amount of assistance compatible with good work. This is not possible in the vaginal operation. With the other operation you can get the skin practically aseptic and this talk of danger in going into the peritoneum is to my mind absolutely childish. In the vaginal operation a lot of assistance is required, the uterus cannot be brought down once in ten cases and it requires a great deal of skill. If a man cannot do a Cæsarean section after he has seen one, he cannot do surgery at all. Sänger very properly puts it that a man has not risen to the requirements of his time

if he cannot perform section when it is called for. It is not a difficult operation, while the other is vastly more difficult. I think the vaginal section is more or less of a show operation and not necessary and I do not think that a thoroughly honest man would put the one against the other, unless in certain exceptional cases.

I have had altogether somewhere between 30 and 35 cases and of these four have died; three of them were impossible cases to have saved and in one there was possibly a faulty technique. In one case the patient had the worst hernia I ever saw after the operation. She was an exceedingly stout woman with 3 to 3½ inches of fat on the abdomen and a dirty greasy skin. The superficial stitches got infected some way or another, then the deep sutures one after another and she had a couple of sinuses for two or three years. We opened the incision and took up these stitches, where there has been any trouble; so far as I know they have all done well.

PATHOLOGICAL SPECIMENS.

W. H. Tytler, M.D. These specimens were obtained from a woman aged 23 who had had symptoms of endocarditis for about a year; there was a history of chorea at the age of ten. The heart shows very profuse vegetations on the aortic valve, which was incompetent, and some on the mitral valve. The vegetations ran from the left anterior cusp of the aortic valve on to the aortic cusp of the mitral. There were fairly dense adhesions of the pericardium, apparently old pericarditis. About seven or eight days before death she developed paralysis on the right side of the body, and again some four hours before death developed convulsions on the left side. On the right surface of the cortex there was extensive blood clot, and in the right temporo-sphenoidal lobe was a large hæmorrhage. The right middle cerebral artery was thrombosed to its origin. The spleen showed recent infarction, the liver showed a marked degree of nutmeg, and the kidney some scars of old infarcts; there was also parenchymatous nephritis.

The other specimens are those of the bladder and kidneys of a man who had had a chronic abscess of about six months' standing in the perineum. It had formed a fistula into the posterior urethra and urine came away through the sinus for some time. The bladder shows an ulcerative cystitis and a diverticulum about the size of the rest of the bladder. It apparently had no connexion with the fistula. There were moderate internal hæmorrhoids. The right kidney is an acute surgical kidney with areas of suppuration in the cortex, the left kidney shows more or less chronic inflammation.

Aorta with luetic aneurysm in the descending arch. An old sac-

culation about 2-3 cm. across and an old slit with rounded, thickened edges, quite old. Evidently there has been a false aneurysmal sac. There was some suspicion of aneurysm, clinically, but the patient died suddenly one morning when he had been in apparently good health. At autopsy it was found that this false aneurysmal sac had ruptured behind the trachea and stripped up the parietal peritoneum on the right side until there was a mass of blood half filling the right pleural cavity.

Lung abscess in a girl, with apparently no history of tuberculosis and no signs of tuberculosis at autopsy except one or two calcareous glands behind the peritoneum. The abscess involved two-thirds of the upper right lobe. The whole lung was in a condition of acute broncho-pneumonia. The illness covered a period somewhat less than a month, the process apparently being acute with no sign of tuberculosis.

A RADICAL DEPARTURE FROM THE METHODS IN VOGUE IN DIETETICS, IN DIARRHŒA AND INFANTILE DISORDERS.

S. Ortenberg, M.D., read the paper of the evening.

F. M. Fry. M.D. I would like to thank Dr. Ortenberg for bringing so close to us some of the researches of the old country. I have had the privilege of observing infants in the Montreal Foundling and Sick Baby Hospital for some ten years back and am much interested in this subject. I went to Berlin, in 1905, fully aware of the fact that most teachers believed that most of our difficulty, in fact almost all the difficulty, was in the digestion of the protoids. In Germany all taught that it was fats alone that gave trouble, and they were giving practically one food only and that was butter milk. Their butter milk contained carbohydrates and a lot of sugar and that material was always boiled, that is to say sterilized. But I found that many infants in Dresden had scurvy, and here as in Berlin butter milk was practically the only food used. I went there believing that all the difficulty lay in the proteids; I was told that all the difficulty lay in the fats. It therefore is intensely interesting for me to-night to hear that all the difficulty is in the sugar. The Germans have switched in four or five years from the fat theory to the sugar theory, and it is a little difficult, I confess for me to bring into agreement that the sugar is at fault and that nature puts over 7 per cent. of sugar in woman's milk.

J. D. Morgan, M.D. I am interested to know whether this milk is the natural butter milk or that obtained as the result of the addition of the so-called butter milk tablets. I ask this because in the past year so many samples of these tablets, especially of German make, have reach-

ed me, that a possible relationship has occurred to my mind between the extensive German use of butter milk and the large variety of different tablets they put up for its manufacture. I presume, however, that the butter milk mentioned by Dr. Ortenberg is of the natural kind as he mentions the almost complete absence of fat which would not be the case were the butter milk obtained by the addition of the tablets to the total milk. Another point which interested me was in connexion with the experimental work. Dr. Ortenberg mentioned at least one case in which experimental intoxication was produced with fatal results.. I presume the infant must have been in a state of health before this work was commenced or else the results would hardly seem perfectly clear, and it just struck me that at this period when so much talk is going on with regard to experimental work on animals, it would be interesting to know how many such cases of experimental disease are produced in these infants and what the percentage of fatal results, merely as a comparison with the mortality among animals. While such experiments cannot be carried out to any extent on this side of the water it seemed to me a rather interesting point to note the difference of public opinion, in Germany and in America especially, towards experimental work.

H.L. Pavey, M.D. I have always looked on the summer diarrhœas of infants as some disturbance of digestion probably due to the food the child was receiving, but I was never able to understand why a perfectly healthy breast fed infant should suddenly take on all the symptoms of intoxication, and I always worked on these cases rather in the dark and my treatment was something along these lines—that corbohydrates and sugars did not agree and the first thing was starvation, and I found in my very small experience that I got best results by starvation and then using weak meat broths until I got the children into fair condition, after which I gave diluted milk, gradually increasing the strength of the same as the condition would permit.

Wesley Mills, M.D. I do not know much about the treatment of infants, but it seems to me that in such a subject as digestion one must bear in mind certain broad relationships, and I have been, from my observations of other people and especially of myself, convinced that the fundamental principles to which Dr. Ortenberg has referred are illustrated in adults also. Now, when you consider the relation of digestion to the blood and of the blood to the tissues, something which the books never make quite clear, but which I have always tried to bring out in my teaching, it has always been, a necessity, to my thinking, to connect the metabolism and the blood and lymph and digestion of the food together. In the first place, before Pawlow's discoveries were announced

I had noticed, like other observers, that one's digestion depended not only on the food, and one's general health, but on certain surroundings. One who had been used to certain surroundings suffered under others.

Pawlow illustrated this experimentally, but I think it is a great pity and we require the warning these days, to depend wholly on the laboratory. We should go out into nature and also look in upon ourselves. I have long also noticed in myself that abstinence or almost total abstinence from food for a meal is very beneficial not only to digestion but to the whole body. If I have a difficult task I starve on it, I do not eat much then. We cannot have the necessary energy for digestion and for the other work of the body too. These lower processes cannot go on well if we are expending mental energy, that is, they do not progress well with all men, and I happen to be one of those men. I do not digest carbohydrates and especially sugars well. If I want to be in my best form for mental effort, I confine myself to some bread crust and some broiled beef steak. Now, if I should take carbo-hydrates on that evening I would know it, there would be greater effort required to perform that particular task. When I went to see Berlin first I walked around considerably and I found that I could take an extra quantity of sugar to advantage and also could drink beer which does not agree with me under ordinary circumstances. In other words, there is a relation between the metabolism and the digestion. I believe that if we applied this principle in dealing with the question of the quantity of food and also its quality we would often avert trouble. Just now we are probably inclined to attribute too much to toxines generated in the alimentary canal. They probably do play a part, but one must remember that if the blood is withdrawn to an excessive degree into the splanchnic region it cannot be well distributed over the rest of the body, and the reverse; to a perfect man physically that may be a slight matter, but there are very few perfect men, and when a human being departs from this normal perfect condition such principles as Dr. Ortenberg tells us Professor Finklestein is advocating, seem to apply. I have some experience with butter milk which ordinarily I never care for in cold weather, though I find it a stomach tonic in very warm weather, and last year when I had an acute infective cystitis and there were toxins locally produced, with some fever, I for weeks lived very largely on butter milk. Then there came a time when I did not want any more. Here there was a relation between these toxines and the whole of the metabolism. I found that there came with this a cry for more air. I never kept my windows open so much as after that infective process began. I found that dogs did not like butter milk in cold weather, but that they were very fond of it in very warm weather. Now, the laboratory in these cases is really rather furnishing

a means of investigation than a solution of the problem, if it be a solution. These are among the general principles that one must consider in all these cases. We are a very complicated organism, and we may make a mistake in keeping too much to one aspect of a subject in investigating it, and we constantly have to guard against too narrow and restricted (however accurate), a view of things. It is by keeping in mind these general physiological relations and studying them in oneself that one will come to the laboratory in the right state of mind. It is to be borne in mind that the laboratory can be at best a means to an end;—that the interpretation and application of its results must come through general experience.

S. Ortenberg, M.D. With regard to the remarks of Dr. Fry, that the Germans have from time to time changed around in their theories and beliefs as to the cause of this condition in infants, this might be said in reply. Finklestein does not deny that it is possible to produce an indigestion through injudicious and excessive feeding of albumin. What he refutes is that the albumin, next to the bacteria, is *the* etiological factor in the causation of Summer Complaint. In reply to Dr. Morgan, the butter milk employed in Finklestein's Institute is natural butter milk. As to whether the public in Germany do not raise any strong objections to the experimental investigations being carried out on children, it may be remarked, in the first place, that this work is done in an institution controlled by the State. The Government has implicit trust and confidence in the medical and research staff, and gives them a liberal scope. Furthermore, very little of this work is permitted to reach the ears of the general public; and what does leak out is soon passed over quietly. For, the German lay public—unlike the British—is educated to respect, in the full sense of the word, scientific research-work, and especially so that connected with Medicine.

W. Grant Stewart, M.D. This is a most interesting paper, and the discussion has been most instructive. We are very grateful to Dr. Ortenberg for bringing this before us and we must congratulate him, and we hope to hear from him again of his work, particularly along this line. I asked a lady superintendent of one of the large homes for babies, in this city, with regard to this infant feeding, a woman who had been at the institute for many years and one of great common sense. She found that ordinary milk partially diluted with barley water seemed to agree better with most children than any other kind of food. We find men, like Boudin, of Paris, feeding new born babies with almost pure milk, we have Rotch and Holt's method of modifying milk, and it is hard to say what is the best, the only thing is to study the individual child and treat as an individual case.

The fourteenth regular meeting of the Society was held Friday evening, the 15th April, Dr. W. Grant Stewart, president, in the Chair.

LIVING CASE: CHRONIC SINUSITIS.

E. Hamilton White, M.D. My object in bringing this patient before you to-night is to show the result of a radical operation in this condition. There is considerable prejudice against this operation on account of the belief that it necessarily involves marked deformity. Of these cases of chronic sinusitis some can be treated conservatively with satisfactory results, but a considerable number of them require a radical operation to avoid a prolonged persistent course.

In this case, a young man, 21 years old, the complaint was of nasal obstruction for years. He has been under conservative treatment elsewhere for the last five years, having had nasal polypi removed at intervals of about three or four months: during this period there had been more or less constant muco-purulent discharge and other symptoms, such as headache, and general depression in varying degrees; with an acute cold there would be an exacerbation of the symptoms.

After investigating the case thoroughly it was found that the polypi were symptomatic of sinus suppuration and that practically all the sinuses were involved, more so on the right side. Dr. Birkett kindly saw the case with me and agreed that some radical operation was necessary in view of the prolonged history and persistent recurrence of the nasal polypi.

I operated on the 31st of January, and a modified Kilian operation was done. A Luc-Caldwell operation on the antrum was done at the same time, the antrum being found the seat of extensive polypoidal degeneration. The most serious portion of the operation is, of course, in the ethmoidal region which requires a thorough cleaning out to ensure the success of the operation. In this case the frontal sinus was not very large, and therefore I thought we could deal with it sufficiently well and so carried out the removal of the anterior wall, which is the deforming part of the operation. The convalescence was uneventful. He was 12 days in the hospital, during which period nothing of any consequence occurred.

The radical operation has two important features, first, a very radical cleaning of the sinuses, and in the second place (and this is always the most important point) to leave the wound in such a condition that there is permanent free drainage in all the cavities. This is accompanied by the removal of the ethmoid region and the lower portion of the middle turbinate.

The wound was closed by primary suture and a small gauze drain left

in. In removing the gauze there was a slight secondary hæmorrhage and the resulting clots blocked the drainage temporarily and caused some œdema around the wound, but this soon subsided.

The skiagraph shows the diseased condition present, the clouding of both antra is plainly seen, and there is also a marked difference of the ethmoids on the two sides. The second skiagraph was taken after operation and one can easily see the extent of the bone operation. Most of the anterior wall of the antrum was removed in dealing with that cavity, while the frontal sinus and the ethmoidal region were reached by removal of the internal angular process of the frontal bone and the nasal process of the superior maxilla. As one can see, the resulting scar is barely noticeable and there is no deformity of the forehead..

J. Alex. Hutchison, M.D. I should like to express a word of pleasure at having the opportunity of seeing this case. It certainly seems a good surgical proceeding, and the cicatrix on the face is certainly an excellent result.

W. Grant Stewart, M.D. I saw this patient in the hospital, and those who now have the opportunity of seeing how very little scarring there is on the face will appreciate the results of this operation.

CARCINOMA OF THE SPLENIC FLEXURE OF COLON, WITH SPECIMEN.

J. Alex. Hutchison, M.D., and S. B. Wolbach, M.D. This case is of not very unusual interest, but the history is peculiar. The patient was a female, aged 60 years, mother of 13 children, who had been complaining for about six months of more or less abdominal pain, pretty general, particularly in the upper zone of the abdomen. I saw her at her home and recommended removal to the hospital for observation. There was some constipation, lasting over six months; no vomiting, and no very severe pain, although there was fairly continuous slight colicky pain. On admission to the hospital she was a thin, anæmic woman, somewhat dull, with a fairly prominent abdomen which was slightly tense and tympanitic, though no mass or induration was made out, and no evidence of contractile movements of the small bowel such as are seen in ileus. She was kept under observation for a week or two. She had no movement of the bowels for a week before admission, but under enema the bowels freely opened; distension disappeared, and most of the pain. However, in a few days, as there still remained some pain of a colicky character, I recommended an exploration. On opening the abdomen in the median line above the umbilicus what struck one at once was that the patient had been the subject of a very extensive general peritonitis; adhesions were in all directions, the small bowel, the omentum, the colon. but no evidence of obstruction was found, except in the small bowel there

was a well-formed band made up of tissue which had evidently been there for some time. In the pelvis there were many adhesions, and in the left upper zone there was a marked inflammatory mass binding everything down so that one could not recognize the parts.. The descending colon was firmly fixed, as also was the transverse colon. I suspected that there was some growth in the colon, perhaps at the splenic flexure, but there was no obstruction in the large bowel and there was the partial obstruction in the small bowel. I limited myself to the loosening of this obstruction. She returned home to her family with a diagnosis that another operation would have to be performed later on. I had no opportunity of bringing the transverse colon to the descending colon, if one had wanted to make an anstomosis, so that if obstruction had taken place it would have called for a transplantation of the small bowel into the descending colon. She was warned about her diet, but she partook freely of some solid food on one occasion, and which was followed by severe pain and vomiting, for which condition she was re-admitted to hospital where she died a few hours later.

S. B. Wolbach, M.D. A word or two of explanation will suffice. The transverse colon was adherent to the sigmoid and the first part of the descending colon was adherent to the kidney. The ulceration is exactly at the splenic flexure where the bowel is most sharply bent and surrounding that part of the intestine was a fair sized abscess cavity in contact with the wall of the colon, the kidney and spleen, so that it was rather difficult to remove the specimen. The spleen is still attached.

EXPERIMENTAL INTRA-THORACIC SURGERY—DIFFERENTIAL METHODS. EXHIBITION OF POSITIVE PRESSURE APPARATUS.

E. M. von Eberts, M.D.

E. W. Archibald, M.D. (See page 508.)

J. M. Elder, M.D. I have been very much interested, indeed, in this paper to-night, and quite agree with what Dr. Archibald has said that not only the Society, but the whole surgical fraternity in Montreal, are very much indebted to Dr. von Eberts and those who have been associated with him in this series of experiments. The subject is a very wide one, and, as Dr. von Eberts has said, the experiments are at their beginning, but we have all been deeply interested in watching the experiments leading to the more safe performance of thoracic operations. Dr. von Eberts has talked of pneumonectomy; this is only one of the numerous uses to which the method can be applied. Operations upon the heart, upon the œsophagus, any trans-thoracic region, the thoracic duct, any operation necessitating the opening of both sides of the thorax and the keeping up of the supply of air to the lung. Dr. Archibald has just hinted at another method, namely, the question of passing the tube down

into the trachea and forcing air in that way. I would like to ask if Dr. von Eberts has made any experiments along this line. It has been lately found that instead of using air, oxygen may be introduced. I would like to say here that this method of aspiration of the pneumo-thorax is, of course, nothing new; it has been known to general surgeons for a long time. I am sure it is sixteen years ago since I presented a case before this Society in which this was done.

Every one knows the very grave danger there is in accidental pneumothorax in operating, and we are particularly to be congratulated upon the fact that this beginning for an even safety has been made here in Montreal. Another point is the difficulty in giving an anæsthetic by the ordinary method. This will have to be remedied by giving the anæsthetic in some other way, not depending upon the air absorption from the lung. It seems to me that what Dr. Archibald has said is true, that the apparatus used by Willy-Meyer appears to be the type of apparatus of the future. Of course the type arranged by Robinson is far too cumbersome for ordinary use. The man who gives the ether is in a cabinet under the plus pressure while the patient is kept under the negative pressure. It occurred to me that a negative pressure chamber, such as the oxygen apparatus used by those who go into mines, might be considered.

G. E. Armstrong, M.D. I should like to congratulate Dr. von Eberts, Dr. Archibald and Dr. Hill, for the very interesting subject they have brought before us. I have no experience in this work, but from reading the subject as it has appeared in the journals, I am inclined to agree with Dr. Archibald that up to the present our best results are obtained by the negative and positive pressure apparatus so arranged that one can easily change from one to the other. The three things that strike the general surgeon are, first the enormous field of usefulness that may be opened up by this work. We have all felt the great limitations in getting access to the thorax for many reasons and many purposes. Two great difficulties present themselves, however, and one is the difficulty in occupying the space from which the lung has been removed. This has often been done experimentally, but, when one attempts the same operations in the human, one finds that the conditions are essentially different In animal experimentation a normal thorax is opened, the lung tissue, mediastinum, and great vessels and the heart are normal, elastic and more or less movable. In the human we do not operate under these conditions. We would like to operate in conditions where repair has failed, the elasticity of the lung materially impaired and bound down by

a thickened inelastic plura, where the mediastinum is fixed and the heart and great vessels held in an abnormal position by firm adhesions.

Another great difficulty is that of getting quick and safe union, for example, in the œsophagus after resection of a malignant growth. Abdominal surgery is possible because we get union of peritoneal surfaces immediately. They unite while we look at them, and that union is air tight and water tight and serves until a firmer union of the connective tissue takes place. In the thorax, for instance, in the resection of the œsophagus we have no peritoneal covering. It is quite possible to bring the stomach up through the diaphragm and remove the growth from the œsophagus and fix the ends together by sutures. Can we maintain this apposition in the absence of the peritoneal investment until union takes place?

These are some of the many difficulties which present themselves, and which offer a most inviting field to the investigator. There is little doubt that these difficulties will be overcome, and I wish our present investigators every success in their efforts to extend the field of surgery in this direction.

Maude E. Abbott, M.D. Apart from the value of the investigation I would like to mention the fact that experiments such as these provide most valuable sets of specimens; several of these sets are now in the museum.

E. M. von Eberts, M.D. With regard to Meltzer's method, it, of course, necessitates tracheotomy or peroral intubation. If lung inflation can be maintained without tracheotomy, manifestly it should be done, as it always complicates matters very much. In this method the essential is that the tube passed down near to the bifurcation should allow room for the return flow of air, and the opening in the trachea should be large enough for the admission not only of the supply of air or oxygen, but for the free escape of the air returning. While in this method of Meltzer it is true that the air enters and returns by the same route, provision is made in the size of the tube for the free escape about it. This is simply a repetition of a very old physiological experiment in the pigeon, where the lung was maintained in a distended state through the passage of a current of air through the humerus of the pigeon which connects directly with the respiratory viscera. So that Meltzer's method, although the intake and outlet are by the same tube, is founded on an old physiological experiment. None of our experiments were carried out with the aid of tracheotomy. Thoracotomies were performed without differential pressure. With regard to the anæsthetic there is no doubt that the removal of a large amount of lung removes a certain amount of ab-

sorbing surface, but in doing pneumonectomies upon rabbits, very little anæsthetic is required after the thorax is opened. With regard to the application of the combined method of Meyer, I think the development of intra-thoracic surgery depends primarily upon the invention of some cheap and simple apparatus. The ordinary negative pressure chamber requires an outly of $1,000 and an expert to look after it. Meyer's combined method is even a more costly affair and requires the care of a special assistant.

With regard to the prospects of developing a satisfactory technique for œsophageal suture, I think that once a safe approach is established a method of establishing a rapid and safe anastomosis in cases of stricture of the lower end of the œseophagus will be developed in time; that, however, is one of the least favourable propositions.

The specimens I have here will show the effect of aspiration. The first specimen is of a rabbit with right lung removed. On examination you will see that the cavity has been completely obliterated; the heart and pericardium occupy the upper zone of the thorax. The diaphragm has risen to obliterate that portion of the pleural cavity which is occupied by the wedge of the lung posteriorly; between the two is the displaced and enlarged butterfly lobe; on the other side is the normal left lung. In the other specimen (frozen sections) one can trace the eviscerated cavity.

PATHOLOGICAL SPECIMENS.

S. B. Wolbach, M.D. The first specimen is a branched Meckel's diverticulum, the intestine has been inflated; the next is a specimen from Dr. Armstrong's service from a patient with general peritonitis, and is an enterolith in an inflamed and perforated Meckel's diverticulum. No. 3 illustrates the effect of injection after delivery in the 7th or 8th month of pregnancy. The uterus shows the placental site deeply ulcerated, a necrotic cervix; and an abscess of the corpus luteum which is not common. Here is a lung from an elderly person who had chronic myocarditis and chronic nephritis. The lung is interesting, because it shows marked emphysema and emphysematous bullæ of unusual size. The next preparation is from Dr. Finley's service, a case of malignant endocarditis with a mycotic aneurysm of the ascending aorta. At autopsy, there was found also a purulent pericarditis, and in the smears from that preparation there were Gram-negative diplococci which were intracellular and identical in appearance with the gonococcus. We did not abtain cultures from this case, not having on hand a large enough quantity of the medium. The patient had been treated one month before admission for gonorrhœa. Unfortunately, we did not have sufficient

history during the life of the patient to prove this case as one due to the gonococcus. To compare, I have this heart of another case of malignant aortic endocarditis from a man of about 25 years with mitral stenosis. It is simply a routine specimen and also shows two rather good infarcts in the spleen.

The next specimen is in some respects one of great rarity. A very extensive prolapse of the rectum, apparently a more recent prolapse upon a chronic prolapse. The cause of death was rupture of the sigmoid flexure. The abdomen was found filled with hardened and molded fæces at the autopsy.

The last preparation is one about which there is some slight doubt as to the ultimate pathological diagnosis. It is a case of jaundice of camparatively short duration in a subject with alcoholic and syphilitic history. Post mortem revealed a liver weighing 905 grammes of very lax consistency and which on section showed mottling with red and yellow portions predominating. The gross appearance is that of acute yellow atrophy. A crude section showed very extensive destruction of liver tissue. I am not yet able to state positively that it is a case of acute yellow atrophy; at least it is one of a very acute destruction of the liver substance. The aorta shows a thickening and wrinkling of the arch and thoracic portion which is probably syphilitic in origin.

F. G. Finley, M.D. With reference to this case, the man was admitted to the hospital in a condition of delirium, with a deep jaundice, a normal temperature and a liver which I just felt on the first day. Later it was very greatly decreased. He passed into a condition of coma and died. During life, we thought the condition might be one of cirrhosis although the absence of splenic enlargement was against this. He had had syphilis, and it is possible that the acute yellow atrophy was due to this cause. A second case was recently in the hospital with heart disease in which the liver was enlarged, and which developed delirium and jaundice late in the disease, and Dr. Wolbach reported very marked atrophy of the liver. In this patient there was also evidence of syphilis, post mortem, in the aorta.

E. W. Archibald, M.D. I had the privilege and pleasure of assisting Dr. von Eberts in a number of his experiments, and I must congratulate him very heartily upon the very excellent piece of research work he has done, which I hope is still only in its beginnings. There remain a very large number of questions of interest to the surgeon and to the pathologist alike in experimental lung work, and I hope that here, in Montreal, the solution of a number of these problems will be accomplished. Coming particularly to questions of detail, one might say a great deal upon various aspects of the subject, but time will permit of

but two or three points which I would like to bring out. First, in performing removal of parts of the lung or the whole of one lung in dogs, one of the chief difficulties has been found to be that after closure of the soft parts the vacant space was not immediately filled up by bulging of the mediastinum, uprising of the diaphragm, and falling in of the thoracic walls, but that gradually, within a few days, there occurred a large transudate into the cavity which caused the death of the animal from the third to the fifth day. I believe that Dr. von Eberts was the first, working at that time upon rabbits, to adopt the principle of inducing negative pressure at the close of the operation after having performed part of the operation under positive pressure. He was the first to employ aspiration of the chest to remove the pressure after closing the thoracic wall. Although Dr. Robinson has come to use this procedure, Dr. von Eberts employed it last fall. In this way the transudate is very much less likely to occur; in other words, the mediastinum is given time, under more normal conditions, to accommodate itself to the vacant space, and the space is gradually filled up to a very large extent, without much transudate or with none at all. The time has certainly come when, in Montreal, we must be prepared to do exploratory thoracotomies, if necessary, on both sides of the chest. Of course, we have done this on one side when we were sure that the other side was in good condition; but there are cases in advanced surgery in which a double operation is indicated. This work indicates a beginning in this line in Montreal. There are other applications of differential pressure in ordinary clinical work, such as certain points in the treatment of empyema, removal of tumours of the thoracic wall, exploring of the lung itself for abscess, and possibly for removal of tumours and excision of a lobe of the lung for chronic bronchiectasis—there are numerous processes like these which can be very much better treated if one had such an apparatus perfected. I might call attention to Meltzer and Auer's article in a late number of the New York Medical Record, in which they advise the method of continuous intra-tracheal insufflation. This does very well in laboratory animals. Elsberg has proposed a more elaborate apparatus in the human, by which the insufflated air is supplied by a motor-driven pump. The theory is, that this can distend the lung at about half its normal excursion, and that the lung can be kept in this state without respiratory movement at all. If this can be proven to be applicable with safety to the human, it will have the advantage over the positive and negative apparatuses that it can be used by the average surgeon with safety and economy. The question is a very wide one, and I think the Society is to be congratulated in having this extremely scientific series of experiments placed before it.

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ON CANADIAN EFFORT AGAINST TUBERCULOSIS.

BY

J. G. ADAMI, M.A., M.D.

Meeting thus, and at this time at the Royal Edward Institute, it is inevitable that one matter is foremost in the thoughts of all of us, the death of the great King who gave his name to this building. It is but a few brief months since we were met together outside the door of the Institute under the presidency of one who took the keenest interest in our work and gave it hearty support,—the late Sir George Drummond—awaiting the moment when for the first time the King's touch, in England, should open an institution in the greater Britain across the seas. And following the opening of the doors and the raising of the flag by His Majesty's hand, there came his message: "I shall always take a lively interest in the Institute, and I pray that the blessing of the Almighty may rest upon all those who work in and for it, and also upon those for whom it works." Close upon twenty years ago it was my privilege to hear the King, then Prince of Wales, sound the first effective note of his interest in the campaign against tuberculosis and thereby start the active campaign in Great Britain. It was at the International Congress of Hygiene, in London, of which he was President, when in his opening address referring to the ravages caused by the disease and the evidence brought forward that it is preventable, he uttered these memorable words: "If preventable, why not prevented." These words may truly be said to have initiated the campaign in Great Britain. You all know the active part taken by him in the British Association for the Prevention of Tuberculosis, and how after his recovery from that illness before the coronation, an illness which stirred the empire to its depths, he dedicated the thank offering of his people to the establishment of the King's Sanatorium at Midhurst. In the work, therefore, of those who with us are carrying on the warfare against preventable disease, Edward the Seventh played a very active part. There will be other monuments raised throughout the empire for the beloved monarch,—beloved as no King of England has ever been; there will be another

Presidential Address at the Annual Meeting of the Canadian Association for the Prevention of Tuberculosis, Montreal, June, 1910.

raised here in Montreal, but none of them will carry down to posterity that peculiar possession of almost personal relationship with the great king of the British people.

And here, while touching upon these wider themes, it is right and fitting that this meeting take official cognizance of the passing away within the last few days of another great man intimately associated with our work,—the man, indeed whose discovery of the bacillus and whose masterpiece of demonstration of the essential nature of tuberculosis made the campaign of prevention possible. Generations before Robert Koch it was known that some cases of consumption underwent cure. Generations before, certain communities—but certain communities only—realized that the disease is infectious, but in the absence of sure knowledge the means adopted for its prevention were lamentably deficient. It is, in the nature of things, that the discovery of the *causa causans* of a disease offers the key to a thorough understanding of the phenomena of that disease and of its mode of development and spread. Robert Koch and his discovery made the world-wide campaign against tuberculosis possible. Without the demonstration of the existence of the tubercle bacillus, of its habits of growth and modes of conveyance from man to man, from animal to animal, from animal, I may add, to man, we would remain unprovided with a gospel of means of prevention. We could not advance as we are advancing at present with the sure proclamation that the disease is preventable; we could not surely teach the people how to arm themselves against this greatest social scourge of modern life, and, if it be not presumptuous to strike the personal note, may I add that I am grateful that the honor you have done me in electing me President of this Association, permits me to voice what must be the sentiment of all of us when mentioning the name and achievements of the great Prussian bacteriologist, and this because it has fallen to my lot on more than one occasion, as at the now historical private conference held at the Congress in Washington two years ago, to take a somewhat prominent position in opposition to Koch's attitude, more particularly on the subject of bovine tuberculosis. Two years before Koch's famous pronouncement at London, in 1901, the observation conducted by Dr. C. F. Martin and myself, on behalf of our Government, led us to advise the Minister of Agriculture that the main cause of human infection was from man to man, but at the same time to point out that the very difficulty in the conveyance of tuberculosis from man to cattle, indicated that it was possible by simple methods of isolation to eradicate tuberculosis from among the cattle of the Dominion and thus not only save our farmers from great future loss, but also by the establishment of uninfected herds bring them great future gain. The work of the last ten years only makes

me the more convinced of the rightness of my contention. Koch, unfortunately, as most now agree, in his celebrated pronouncement failed to draw this latter deduction and failing, placed in the hands of the retrogressivists a powerful instrument against legislative advance. But if thus, while agreeing with him upon the main data, it has been my fate to join issue with him over the most important matter,—to be a David to his Goliath—that does not one whit detract from my admiration of his great achievements and recognition of the debt owed to him by humanity for all that he accomplished in the development of bacteriological technique, and, above all, for his discovery of the tubercle bacillus. And I would propose that this congress convey to the German Consul, for transmission to his Government, a vote of appreciation of what Canada and the world in general owes to the great man of science recently deceased.

But if we have to commemorate these most notable losses, here in Canada the last twelve months have been memorable as no previous year has been, for enthusiastic and active advance all along the line and that from the Atlantic to the Pacific. Everywhere our people have been roused to a realization of the seriousness of the problem, of the losses that phthisis and other forms of tuberculosis inflict upon the community, of the possibility and the practicability of counteracting the inroads of the disease. The secretary's report, read this morning, gave us in detail the progress made in the Maritime Provinces, in Quebec, Ontario, Manitoba and the central west and in British Columbia. From each province comes the same story of associations being established, of hospitals and sanatoriums being either in the course of erection or thrown open, of generous aid to the work by private individuals, of municipal contributions and support, and last, and not the least, of participation by the local Governments in the good work and direction and support of the efforts of the municipalities and antituberculosis associations in the different provinces.

More than ever it is brought home to us that this is not merely a campaign against tuberculosis, but is the inevitable centre of a great movement making for social betterment, for the healthy home, for the well being of our people and for their prosperity. If, recognizing the danger to infants from the milk of tuberculous cows, we succeed in establishing a system of inspection of farms and bacteriological examination of milk supplied to our cities we do much more than banish tuberculosis from the dairy herds: we inevitably lead to the production of a milk that is clean and healthy in every respect: to the establishment of well ventilated byres and cattle that are properly cared for: we raise the

standard of dairy farming throughout the district. If, as was well seen after our tuberculosis exhibition in Montreal and Quebec, we impress upon the people the value of sleeping with open windows as a means of strengthening the system against consumption we at the same time raise the general health of those who follow this piece of advice, and consequently their powers of resistance against all forms of infection. If, we demonstrate to our cities for the mortality statistics that slums and regions of overcrowding are the hot beds of tuberculosis, and persuade them that by legislative enactment these slums must be suppressed, we inevitably develop schemes of city planning, of provision of parks and playgrounds, of schemes for the provision of healthy houses for the artisan class, such as we must rejoice to see M. Bourassa persuaded our local house at Quebec to make one of the matters that the Commission of Enquiry upon city planning for Montreal is to enquire into—and here let me express the debt of gratitude which Montreal owes to Sir Lomer Gouin, who personally brought the Bill establishing that Commission before the House, and by his influence carried it through.

I might thus afford instance after instance. Everything, in short, that makes for impoverished health makes for susceptibility to tuberculosis. Everything that makes for better social conditions develops naturally as an object and outcome of our campaign. Thus, it is coming to pass that our tuberculosis leagues and associations are becoming the centres and meeting points for all in the various communities who actively interest themselves in the betterment of social conditions.

Discussing our Annual Report, I cannot forbear calling attention to the admirable work accomplished by our conjoint secretary and lecturer, Dr. Porter. He has during the year travelled from one end of the Dominion to the other, and such is his capacity as a popular lecturer, such his enthusiasm and organizing ability, that he has succeeded in attracting crowded audiences, and in establishing numerous branch associations. Only this last month with Dr. Seymour, of Saskatchewan, he has succeeded in establishing 20 district associations in that province. We owe much to him for the advance of our work.

Yet another matter is likely to develop out of the report, namely, the most important subject of the care of the indigent incurable cases. In accordance with a resolution passed at the Hamilton meeting last year, when Dr. Lafferty, of Calgary, so admirably filled the presidential chair, I wrote, as president, to the various provincial governments and to the general hospitals throughout the Dominion calling attention to the urgent need that cases of this order be not treated as social outcasts, but that where a general hospital is in receipt of government assistance, and

where in a district there exists no institution for incurable cases there is a distinct call upon such general hospitals to assume the care of such. This principle, I may say, is acted upon by all the western provinces from Manitoba to British Columbia, and to all intents and purposes is admitted and acted upon under the Ontario law. The eastern provinces alone do not as yet admit it and, as I learn, this official communication on my part was received with not a little opposition in New Brunswick. Let me admit freely that the conditions of hospital support are very different in the east and in the west; that the Government subsidy in the former is not per capita, and that the sum granted to the individual hospitals is not on the same scale. Nevertheless, I am sorry that, to put it frankly, those who criticized my letter did not read between the lines, and see that it could not be the intention of the Association, composed as it is largely of medical men, to demand that the hospitals should spend the relatively inadequate subsidy received from the Government upon tuberculous cases and be out of pocket to boot. Such, they may be assured, never entered into the heads of those who framed the resolution. On the contrary, the obvious intention was that the willingness to perform the necessary public duty would create a demand upon the Government and the municipalities to assume the cost of caring for these cases which they would be powerless to resist, seeing that this duty is now recognized by all governments that can be called civilized throughout the world. I would further lay down, that it is an economical mistake to multiply special hospitals when it is possible to utilize pre-existing institutions.

And thus I come back to the text of my address before the Association in Hamilton last year. The success of our campaign depends upon our reducing the cost of treatment to the point at which we can show to our governments and our municipalities that it is economically possible to undertake the care, not of the individual and select cases of the disease, but of the body of those suffering from the disease and incapable of providing for themselves. While affecting all classes of the community, tuberculosis lays its heaviest toll upon those setting forth in life, upon those who have not had the opportunity to save against the rainy day. Those provided with this world's goods we do not ask the authorities to aid, nay more, it is impolitic to ask governmental aid on any large scale for those in the first and curable stages of the disease. Some we must ask, but knowing that the greater number of these cases are curable and with proper treatment can be once again made active working members of society, it is the proper and self-respecting policy so to approach and treat those that they look upon what is expended on their

behalf by society as a loan to be repaid when they are restored to health and are capable once again of engaging in profitable work. But more and more am I convinced that the crux of the problem lies in the treatment of the indigent and incurable consumptives. Isolate these and forthwith the main source of infection is removed from our midst. Permit them to remain in the bosom of their families, to live and sleep in the same rooms with other members of the poverty-stricken household, expectorating and discharging the bacilli broadcast, weakened by the disease to the point that they no longer have the energy or even the inclination to protect those around them, and they become the centres from which the whole family and succeeding tenants of the rooms become infected.

Not all our provincial governments have a Cobalt behind them, and are so wealthy and far-seeing as to afford $4.50 per week for the isolation and care of these cases as has the Ontario government. But here, in the Province of Quebec, as I have pointed out more than once, the economical conditions are such that we are provided with a means of solving this problem. Thanks to the self-sacrificing zeal of the good Sisters of Providence, and of other religious communities, it is in our power to isolate these incurable cases to sustain and keep them in relative comfort at one-third the cost of ordinary hospital patients. Whereas the ordinary hospital patient in our general hospitals throughout this continent costs the community from $30 to $36 a month, the Sisters are ready and willing to undertake their care at from $10 to $12 a month. They are willing to take and care for all sorts and conditions, for Catholics and Protestants alike. And nobly have they demonstrated their broad catholicity. This action on their part brings the care of patients of this order within the sphere of practical politics. And our mayor, whose unavoidable absence from this meeting we all regret, and our city council here in Montreal, and, I may add, our citizens as a body, are thankful to the devoted Sisters for their aid and are glad to accept it. At our next annual meeting I trust that we shall be able to report that Montreal has taken this notable step forward, the surest step toward rapid reduction of our tuberculosis morbidity and death rate that can be taken.

How, it may be asked, can the Sisters possibly undertake the work at this low cost? The answer to this first question is simple. The Sisters devote themselves and their lives to the service of God and of their fellows without thought of gain, and as a consequence the cost of service is reduced to what is verily an inconceivable minimum. Whereas a fully trained hospital nurse to maintain herself requires not less than fifty dollars a month or $600 a year—and, as the cost of living goes, this is far from being an excessive sum—I have been informed by a dignitary

of the Church that on enquiry he found that the cost to the mother house of each Sister of one of our leading orders in Montreal was $25 a year, and this included the cost of the habit and clothing. There is the full and eloquent answer to the first question.

How can other and non-Catholic parts of the Dominion follow in the footsteps of Catholic Quebec? I would say, ladies and gentlemen, that it is within the bounds of possibility. Through its religious Sisterhoods the Catholic world has solved one of the painful difficulties of monogamous society. I need not tell you that more women children than men children attain adult life. Living in a Protestant society you know, as I know, each of us more than one case, perhaps many cases, of those who, whether for lack of will or lack of opportunity, have passed the marriageable age. Not a few of these we see active in all good work, the very salt of the earth, but not a few we know lacking initiative, wanting direction, gnawing out their hearts in inactivity, becoming morbidly introspective with the bitter belief that they are failures in life; that their families regard them as such, becoming unduly sensitive, nay often hysterical or confirmed semi-invalids; and if married brothers or sisters ask them to stay with them to help with the family, they imagine either that they are asked out of charity, or that their labours, which may be great, meet with no appreciation; who look upon themselves as family encumbrances, suffered but not welcomed. I can imagine few more bitter lots in life.

Yet this is all unnecessary. Look at our French-Canadian Society. This type of woman is there almost wholly wanting. I know that we Protestants are apt to regard nuns as pusillanimous weaklings who, fearful of facing the world and its duties, have fled to the convent, often before they have known the world and what it has to offer. Ladies and gentlemen, the more I see of the work of the good Sisters, the more I learn from my Catholic friends regarding the inwardness of their lives, the more I find reason to doubt our preconceived verdict regarding them, the more I find to admire in them and their lifework.

There are, of course, Sisterhoods and Sisterhoods, but with rare exceptions I hear from the relatives of the Sisters, that instead of gnawing out their hearts as do so many of their unmarried Protestant cousins in the outer world, their lives are filled with deep peace, and, indeed, their placid faces, when we meet them on the street, give the lie to our Protestant conception of the convent. And we know their good works.

What I would say is, that the time has come for our Protestant

Society to follow the Catholic example. In place of feeling themselves incumbrances let our single women band themselves into Sisterhoods for good works. There is abundance for them to accomplish. I am far from recommending the vow of perpetual chastity, but let them, after a novitiate, bind themselves for at least three years, choosing that Sisterhood and that line of work which appeals to them. And while I believe that a deep sense of religious duty is necessary for such a life, and grows in the fulfilment thereof, and that a due regularity of religious exercise is essential, I would not say that such sisterhood should by any means necessarily be under the dominance of any one particular sect. Let the work to be undertaken, and not the sect, be the dominating principle. But this I do recognize, that the success of any such sisterhood at its inception depends wholly upon governance by some forceful, clear minded and single-hearted woman, and I would be so far worldly as to suggest that to attract other women such a leader should already be of distinction in our society.

I do not think that I am suggesting too much. They have successful orders of Deaconesses in Protestant Norway. I have met them there. I have met them in Germany. They have them in Protestant Scotland. So I would urge that some good strong woman come forward and devote her life to the noble work of establishing a sisterhood for the care of the incurable tuberculous in generous emulation of the work that is being accomplished by her Catholic Sisters. Surely here is a life work that will appeal to our Canadian womanhood, a work that must spread and spread until it embraces all Protestant Canada. Who will come forward?

THE CONDITION OF THE LYMPHATIC GLANDS AS A FACTOR IN THE DIAGNOSIS OF TUBERCULOSIS OF THE HIP AND LOWER SPINE.

BY

A. MACKENZIE FORBES, M.D., Montreal.

In the past great difficulty has been experienced in making a differential diagnosis between early tuberculous lesions of the spine and the hip. In November, 1909, I observed that the deep lymphatic glands in the iliac and inguinal regions were more likely to be enlarged in disease of the spine than in hip disease. Tuberculous lumbar lymphatic glands have long been recognized by orthopædic surgeons as a cause of Pott's disease, and lumbar Pott's disease may be the cause of tuberculous lumbar and iliac glands.

Delivered at the Canadian Medical Association Meeting, Toronto, June 3, 1910.

In early cases of hip disease it is most unusual to see a bilateral or even a unilateral enlargement of the lymph glands, whereas in lumbar Pott's disease, and in tuberculous lesions adjacent to the lumbar region, such a unilateral enlargement is, the writer thinks, common, and a bilateral enlargement is certainly not uncommon in his experience. This statement is strengthened by a study of the lymphatic system. The lumbar region has a most profuse lymphatic supply. This is associated with the iliac glands and these, in their turn, are associated with the inguinal glands. On the other hand the hip joint seems to have a very limited number of lymphatics.

In corroboration of this clinical fact I beg to draw your attention to the following:—

A Small Series of Case Reports Illustrating the Difficulties of the Diagnosis Between Tuberculosis of the Lower Vertebræ and Hip Disease, and Suggesting the Possibility of the Condition of the Lymphatic System Being a Factor in the Diagnosis.

1.—B. L., age 6 years.

This little child was brought for examination on 21st September of the year 1906. The mother stated that the child had first been noticed to walk with a limp last spring. Later pain was felt in the right hip joint. One month ago the mother noticed the hip becoming flexed.

Examination.—The hip is flexed to almost a right angle, and the child complains of pain on the slightest movement of it. There is generalized muscular spasm. Measurements to demonstrate both real and apparent length of the limb, and the circumference of the thigh and calf show no difference between the two sides. This fact was considered significant, but, as there was so much muscular spasm on circumduction, the following opinion was written to Doctor T. P. Shaw, who had referred to the case for examination:—

"We are forced to the conclusion that there is either a Pott's disease of the lower lumbar vertebræ, with the resulting contraction of the psoas, or tubercular arthritis of the hip."

On December 6th (3 months from the first examination) another examination was made.

The note of this examination says:—"The child was admitted for hip disease. The diagnosis was always in question, although there was slight muscular spasm on the right side. The measurements have always remained the same." On this date it is mentioned that there was no scoliosis but there was slight psoas contraction of the right side, that

there was a quarter of an inch atrophy of the right thigh, and that it was impossible to swear to spasm of the erector spinæ.

The child was put in a plaster spica, and 4 months after the first examination the plaster was removed because the child was soiling it, and a further examination and measurements were made. This showed that the left anterior superior spine was held at a slightly lower level than the right, indicating probably scoliosis. Measurements of both extremities were the same. There was no flexion, and no adduction. The patient was kept in bed. On December 31st Dr. Shaw was written to and on this date it was stated that the diagnosis had always been in doubt, that a lumbar Pott's disease, a tuberculous lesion of the hip, and an infective arthritis of that joint had all been discussed, and that as the child was now apparently well, it seemed most probable that we had been dealing with an infective arthritis.

On January 16, 1907, four months from this first appearance, another note was taken. This note is interesting. These are the words:—"Right psoas contraction; slight rigidity of the lumbar spine; *glands enlarged in both groins*; slight flexion of the right thigh; no adductor spasm. The question of diagnosis had to be again considered.

On November 27, 1907, child was again brought for examination, not having been seen since March of that year. The note states:—"The mother says that this child was discharged at her request on the 2nd of March last. The diagnosis was always in question, it being considered lumbar Pott's, but it was impossible to verify this tentative diagnosis. The child is brought back to-day with a prominence of the second lumbar vertebra, muscular spasm being apparent, the diagnosis of lumbar Pott's disease being verified."

The preceding is the first case which I wish to discuss. Its history, as looked at to-day in the light of our present knowledge, is not so very confusing. I think if that little patient were brought to us to-day that we would realize from the beginning that she was suffering from lumbar Pott's disease, and not from anything else, but, although we strongly suspected it, when she was brought to us, and on subsequent examinations, we never could be certain, and kept vacillating in our diagnosis between lumbar Pott's disease, tuberculosis of the hip, and infective arthritis.

There is one point of special interest to me in this history, and it is that at the time of making these examinations I knew nothing of the significance of an involvement of the lymphatic glands, and did not look for such involvement, yet the history distinctly records that these were involved. One thing was not done which to-day we always do

when in doubt, namely, we omitted to use tuberculin. This, as you will see, was used in the three following cases.

The second and third cases which I wish to present should be grouped together because of their similarity.

Case II.—E. D., age 8 years.

A synopsis of her history, as seen in the records of the hospital, was taken on December 28th, 1909.

This little child was brought for examination in the month of June. The diagnosis was then made of tuberculosis of the right hip, but the statement was made in the report taken on that day that the left hip was said to have been affected at different times. The patient was put in a right plaster of Paris spica, and kept in bed. The position in which the patient was placed was probably that of extension and abduction of the right thigh, although the note does not say so.

The synopsis of the 28th December, 6 hours after her admission, states:—"Yesterday my attention was drawn to the fact that the patient had been complaining of pain in the 12th dorsal vertebra, consequently the plaster of Paris has been removed, and we find that the patient, when lying on her back, lies with the right thigh slightly abducted; the lumbar spine in the position of lordosis, and the left thigh decidedly adducted.

The right thigh being fixed, it is found that it is possible to abduct the left thigh without tilting the pelvis on that side. Measurements showed the right thigh to be only a quarter of an inch smaller than the left thigh. Measurements taken from the umbilicus to the interal condyle demonstrate an apparent lengthening of the right side. When the patient lay in the prone position the right thigh was found to be lying in a line with the right side of the trunk, whereas the left thigh was found to be adducted. There was muscular spasm in relation to both thighs, but the spasm was greater on the left side. Both erectores were noticed to be in spasm, but the right erector was shown to be in greater spasm than the left. There was a prominence of the 12th dorsal vertebra. The 11th dorsal, and 1st and 2nd lumbar also shared to a smaller extent in this prominence. Slight scoliosis was noticed. Examination of the right thigh and hip showed, firstly, that the *glands in the groin were enlarged;* secondly, that there was not very great muscular spasm in the muscles controlling the hip. Examination of the left thigh showed *an enlargement of the glands also*, and distinctly more muscular spasm in the muscles controlling the left hip than there was in the muscles controlling the right hip. These words are extracted from the note:—"The diagnosis was made of right hip disease, but the state-

ment that the left hip has been occasionally affected suggests that the affection was more likely to be one of the lumbar vertebræ than of the hip."

From the examination made to-day (28th December), 6 hours after the former examination, we are led to strongly doubt the existence of a tuberculous lesion of the right hip, although the fact that there is greater spasm in the right erector than in the left is against the lesion being a tuberculous one of the spine. Still one cannot help feeling that the indefinitely discovered and complained of, lesion of both hips, is secondary to a primary lesion, if not in the spine, certainly adjacent to it, and that the present condition is probably due to a tuberculous lesion of the dorso-lumbar vertebræ, perhaps added to an original or primary lesion which, as we have before suggested, was probably adjacent to that vertebra.

A large dose of tuberculin was administered. This was followed by a *definite reaction in the region of the dorso-lumbar spine.*

May I draw your attention to two or three points in this history? First, how indefinite were the symptoms. At one time in the right hip, and then in the left hip. Please note the irregular spasm of the erectores, and lastly, note that the *glands in both groins were definitely enlarged.* The statement that has been made that the lesion was possibly not primarily in the vertebræ but rather adjacent to it, is based on the fact that lesions of the vertebræ, as a rule cause generalized muscular spasm and not irregular spasm as found in this case. The eventual diagnosis which was made, and verified by the use of tuberculin, was dorso-lumbar Pott's disease.

Case III.—L. B., age 5 years. The patient, whom I associate with the last, is a little child of nearly five years of age. She was brought to the hospital in the same month as the last, viz., in June. Her parents complained that the child walked with a limp. Examination showed muscular spasm about the right hip, but apparently there was no atrophy. The left hip was free from spasm. There was no spasm of the psoas muscles. A tentative diagnosis was made of beginning arthritis of the right hip, which was placed in a plaster of Paris spica, in which she remained for six months, during which time she was treated with injections of tuberculin.

About the 19th December this spica was removed, and the patient was left in bed without other form of immobilization. In two or three days the patient was brought up for examination, because it had been noticed that there was persistent flexion of the *left hip.* Examination: The patient lies on her back without lumbar lordosis. The right hip and

thigh are larger than the left. There is a distinct fulness in both inguinal regions. An examination of these fulnesses shows that they are due to an *enlargement of the inguinal glands*, especially those of the right side. An examination of both hips shows that there is equal muscular spasm on both sides. With the child lying in the prone position, the right gluteus seems a little fuller than the left, and the first lumbar vertebra sems a little more prominent than any other.

The argument written on that day, six months after treatment was begun, states that it seems certain that symptoms have been seen in both hips, and it seems certain, also, that there is no acute disease in either hip, consequently our attention is drawn particularly to the lower dorsal and lumbar vertebræ. Examination shows little, if any, spasm in either psoas muscle, although hyperextension of the left hip is to some extent restricted. The erectores show equal tone on each side. The administration of a dose of tuberculin to accentuate the symptoms was suggested. This patient, according to instructions, was given ½ mg. of tuberculin, following which there was a general reaction.

Examination: Patient lying on her face shows a definite prominence of the first lumbar vertebræ. The 12th, 11th, 10th and 9th dorsal are apparent. The 2nd, 3rd, and possibly the 4th lumbar are also apparent, their prominence being according to the order given. Hyperextension is more resisted on the right side than on the left. Muscular tone is greater in the right gluteus than in the left. There is definite spasm of the erectores, although, perhaps, there is more spasm in the right than in the left. Hyperextension of the spine is to some extent limited, proven by placing her alongside a normal child of about the same height. In the normal child a more acute curvature of the spine is apparent on hyperextension than in the patient under consideration. In the normal child a distinct furrow was shown in the region of the dorso-lumbar spine, while in the patient under consideration no such furrow is seen. The patient, lying in the supine position, a slight tilting of the pelvis is noticed in this, as in a previous case.

Case IV.—D. C. This little child has a history of trouble in the right hip for just about one year. On October 26th, 1909, she was brought to hospital because of this, and has been treated for tuberculosis of the right hip ever since. On January 20th, 1910, she was admitted for treatment in a Thomas abduction splint.

On April 12, 1910, the following note was made:—"One of the first things noticed in the examination of this patient is that the *lymphatic glands in the right groin are greatly enlarged*. Those in the left groin are enlarged also."

As, by this time, I had become convinced that an enlargement of the lymphatic glands was of some significance in the differentiation between hip disease and dorso-lumbar Pott's disease, I quote verbatim from the case report:—

"As this, (the enlargement of the lymphatic glands) is not without significance a careful examination for purposes of differential diagnosis will be made. Patient lies with lumbar lordosis. The circumference of the right and left thighs is the same. There is muscular spasm on endeavouring to move either hip, but this spasm is not very great, although it is certainly greater in the right hip than in the left hip. The patient does not complain of pain in either hip. Adduction is slightly freer on the left than on the right side. Patient being placed in the prone position it is noticed that the 12th dorsal spine is more prominent than that of any other vertebra; that the 9th and 11th spines are the next most prominent. There is a slight suggestion of scoliosis, and a definite muscular spasm on the right side. It is impossible to extend the right hip without moving the pelvis, and impossible to demonstrate spasm of the erectores. Child should be given an injection of tuberculin because it might be well to ascertain the position of the tuberculous lesion."

On April 15, 1910, the note is:—"Child has had ½ mg. tuberculin, with a slight general reaction. Locally the signs have not materially differed with the exception that there is a little greater spasm of the erectores, especially that of the right side." Three days elapsed from the last note, and on the 18th April another note was taken. This states that three days after the admisistration of the tuberculin the child's temperature rose to 103°, and an examination was made. The erectores were found to be stiff and boardlike. Psoas contraction was marked on both sides, but especially on the right side. On the following day the temperature having subsided, a careful examination of the local conditions was made with the patient lying in the prone position. A marked prominence of the dorso-lumbar vertebræ is apparent. Both erectores are still in marked spasm and any attempted movement of either extremity throws them into a position of hypertonicity. There is little if any, psoas contraction of the left side. There is more psoas contraction of the right side, it being impossible to hyperextend that hip without moving the pelvis. With the patient lying in the supine position bi-lateral glandular enlargement is apparent; there is spasm of the right adductors, and greater spasm of the left adductors. The diagnosis is dorso-lumbar Pott's disease.

The fifth case whom I present seemed to me one in which the diagnosis

was very apparent, but still, as it had caused others to err, I cite it in a very few lines.

Case V.—A. O., age 25. This Italian came to the hospital and was sent by the segregating officer to the medical clinic. His complaints were simply pain in one hip. An examination being made it was found by the physician in charge that he was suffering from a certain amount of flexion and that there was pain on any attempted movement of this member. Tuberculosis of the hip was suspected and he was admitted for treatment.

On examination the first thing noticed was an enlargement of the glands in the iliac and inguinal regions of the affected side. These were not only palpable, but were apparent to the eye and resembled a bunch of grapes. The hip was flexed, there being a contracted psoas muscle. Under our present knowledge an examination of the spine was suggested, even before that of the hip. Rigidity of the dorso-lumbar spine was noticed with extreme spasm of the erectores. A careful examination was then made of both spine and hip, and this revealed that the patient was suffering from unmistakable dorso-lumbar Pott's disease.

The sixth and last illustrates to the writer's mind how difficult has been the diagnosis between dorso-lumbar Pott's disease and hip disease in the past.

The writer, about the time of the recent Congress in Washington, was invited to attend a surgical clinic in one of the largest medical centres in the United States. When at this clinic his attention was drawn to a child of about ten years of age, who was being treated in a hip splint. The chief of clinic, in explaining the case, stated that there had always been a certain doubt as to the diagnosis, but that the symptoms had not been severe enough to warrant that of tuberculosis of the hip, and, consequently, a diagnosis of infective arthritis had been made. The glands in both groins were enlarged, and easily palpable. The history simulated that cited as the first of this series of cases. An examination was asked for and granted. The erectores were in extreme spasm, and the patient was suffering from dorso-lumbar Pott's disease, to which diagnosis the surgeon in charge did not take exception.

I have drawn your attention to this series of case reports of patients suffering from tuberculosis of the dorso-lumbar region of the spine, in all of whom the diagnosis of hip disease had been made, not to warn you of the difficulties of the diagnosis between these two affections, but to suggest the possibility of the condition of the lymphatic system being an important point in considering the diagnosis. I recognize that the evidence which I produce is very small in favour of my view that the lym-

phatic glands are enlarged in Pott's disease more frequently than they are enlarged in hip disease, and I do not speak *ex cathedra* nor ask you to accept what I say without further observations being made on this point. I would, in fact, have much preferred to have waited until I could have reported a hundred cases of these two diseases, and been able to state the condition of the lymphatics in them, but I realize that because my opportunities to collect such a number of cases are few, it might be four or five years before I could report on the subject. I have, therefore, taken you into my confidence, and ask you, in closing, to observe the condition of the lymphatic system in these patients in order to ascertain whether we have not now another symptom characteristic of spinal or allied disease, as opposed to tuberculosis of the hip.

THE USE OF DIFFERENTIAL PRESSURE IN THE TREATMENT OF EMPYÆMA.

BY

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As the bar to progress in thoracic surgery has been the danger of lung collapse, clinical advance in this field has awaited the invention of a certain and practical means of preventing pneumo-thorax. This difficulty is now overcome, and there are already well recognized procedures in which the use of differential pressure is a necessary part of the technique. Among such, one might mention the removal of tumours of the thoracic wall, pleura and lung; exploration of the pleural cavity for foreign bodies; excision of the whole or part of a lobe for bronchiectasis; and gastro-œsophagostomy for malignant disease of the cardia, or benign or malignant stricture of the lower extremity of the œsophagus. The widest field, however, for the application of differential pressure is found in the treatment of empyæma, where, by its means and by the application of a suitable dressing after thoracotomy, the period of disability may be very greatly curtailed. At the time of operation and at subsequent dressings positive differential is especially suitable, as with a portable apparatus not only hospital cases, but also cases operated upon in private homes, may enjoy the benefit of this method of treatment.

The accompanying illustrations convey graphically the effects of differential pressure in the treatment of empyæma (Figs. A and B). Following thoractomy an empyæmic cavity remains exposed to atmospheric pressure. In extensive cases the whole lung may be collapsed and may lie in close apposition with the mediastinum. Further, the mediastinum

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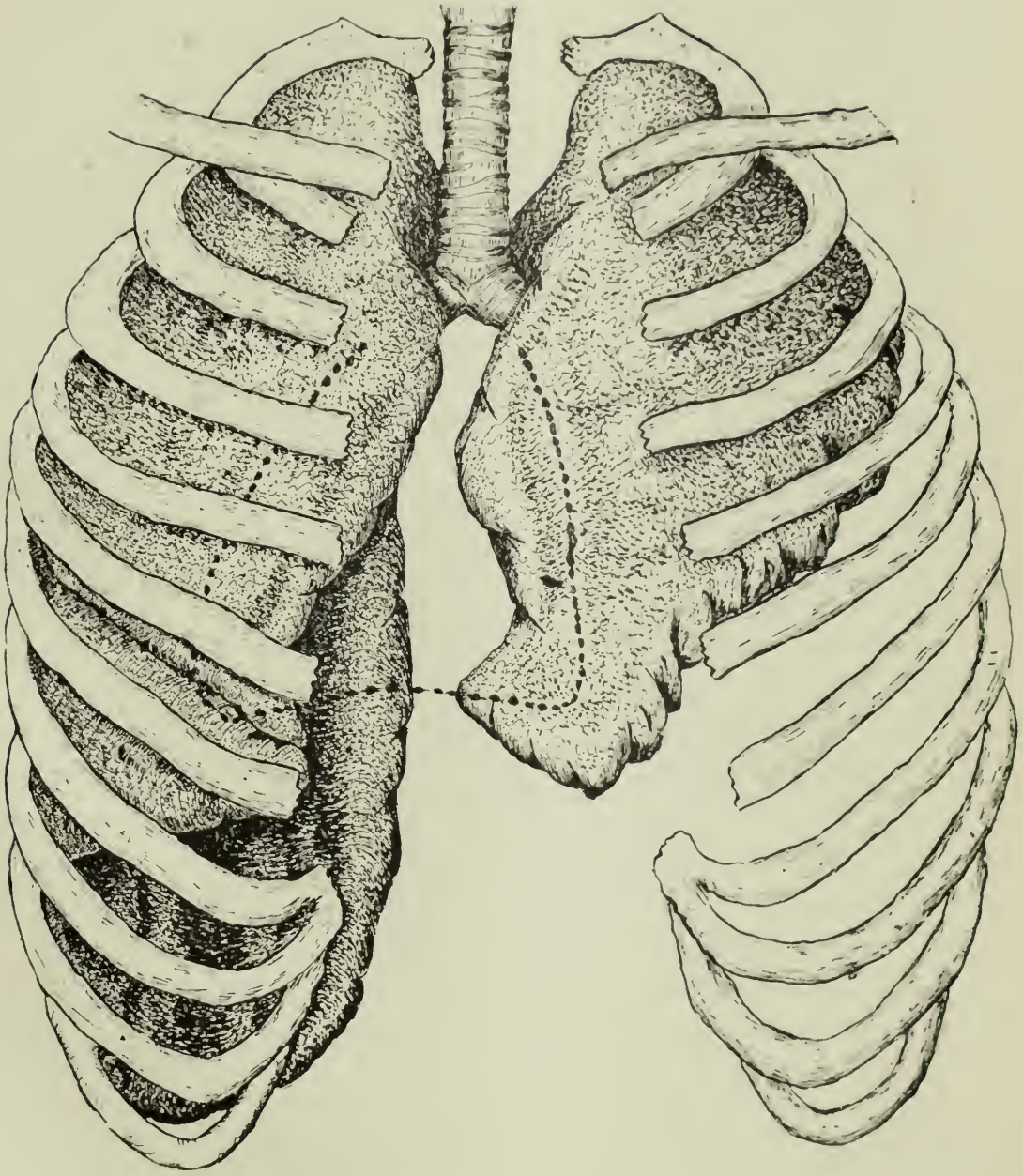


Fig. A.—Diagram showing pressure effects of pleuritic effusion upon the respiratory viscera and mediastinal structures.

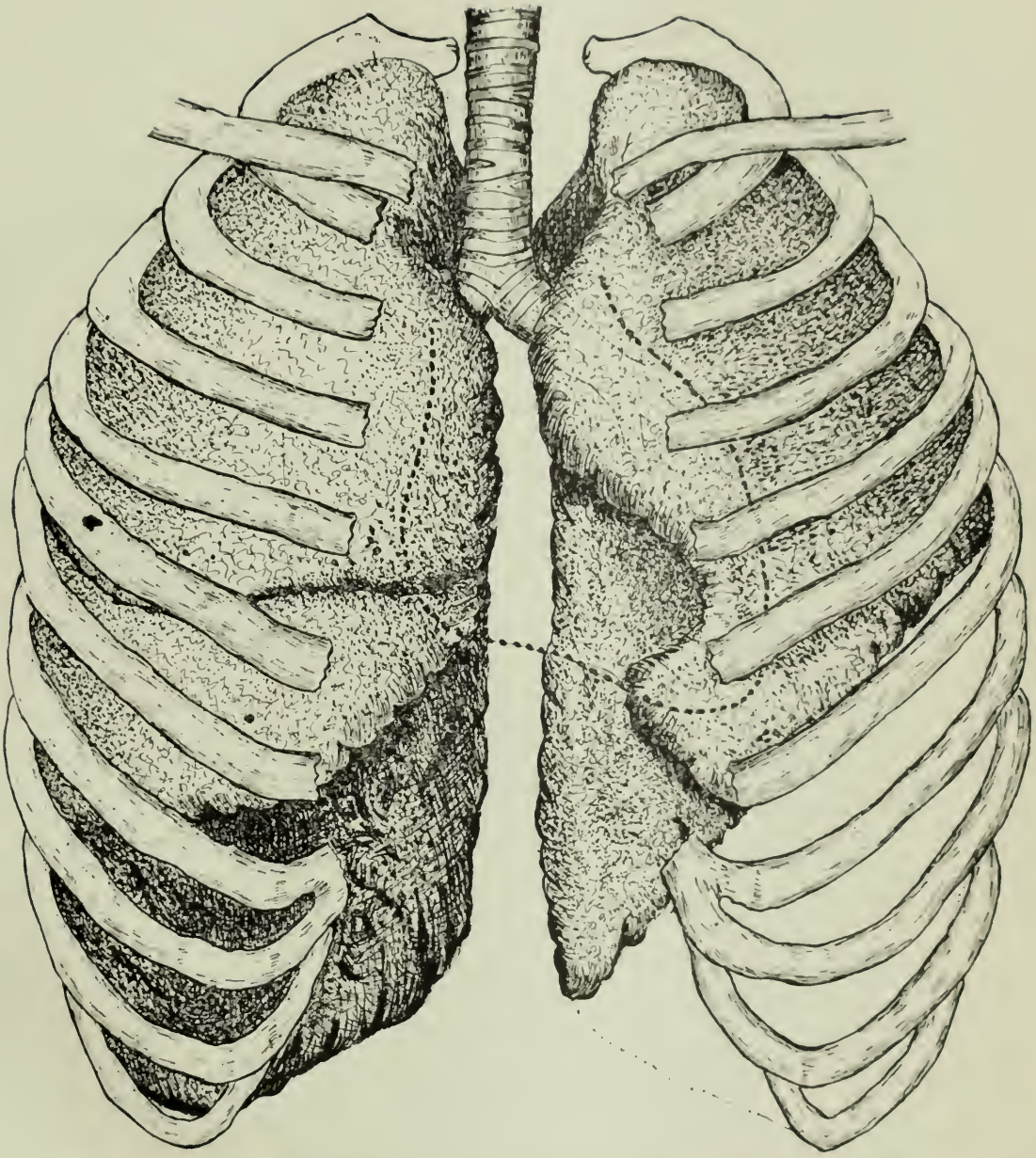


Fig. B.—Diagram showing correction of alignment of mediastinum and restoration of normal contour of lung on the unaffected side under differential pressure and in the presence of thoracotomy. The lung on the affected side also shows a slight increase in volume.

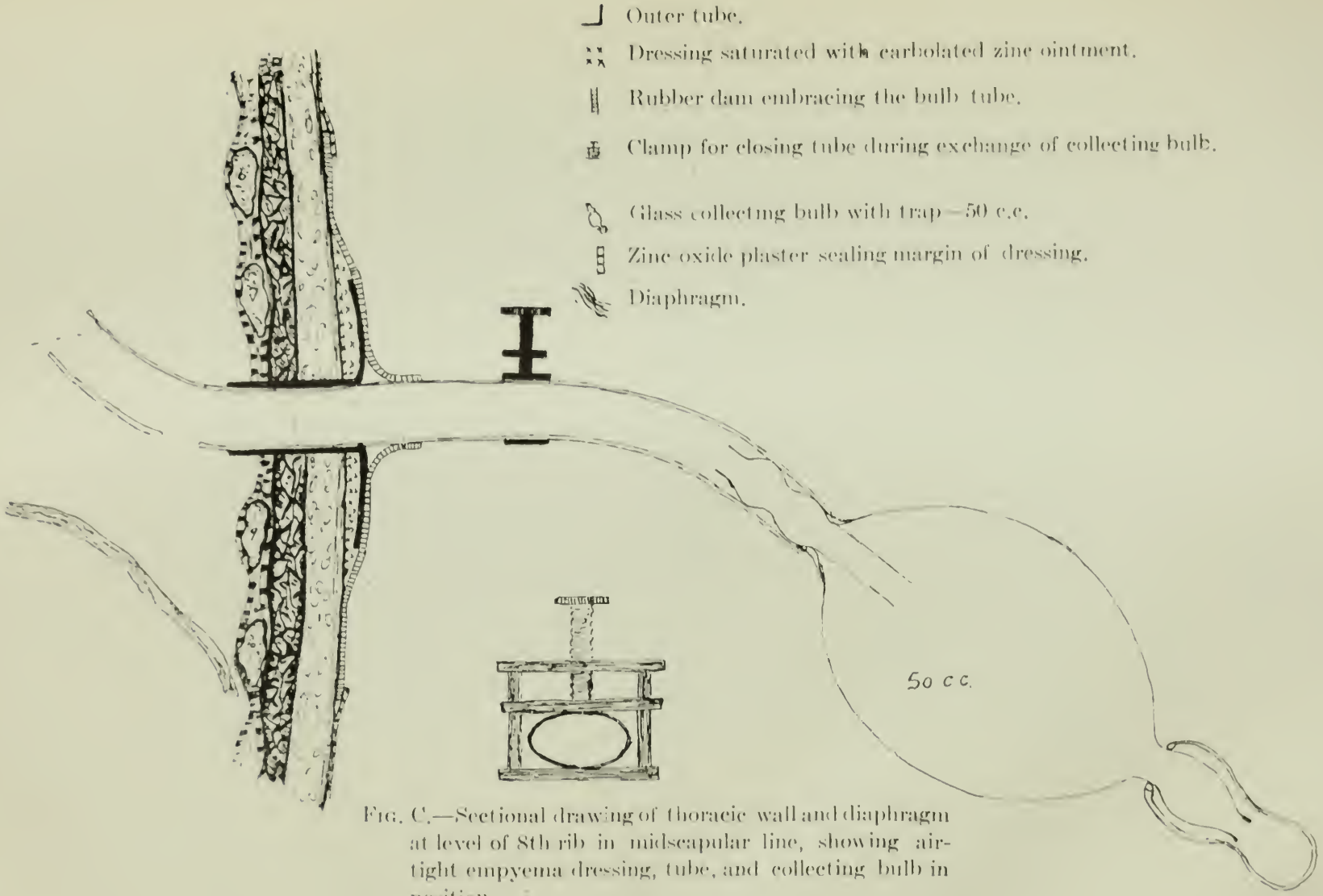

Outer tube.
Dressing saturated with carbolated zinc ointment.
Rubber dam embracing the bulb tube.
Clamp for closing tube during exchange of collecting bulb.
Glass collecting bulb with trap—50 c.c.
Zinc oxide plaster sealing margin of dressing.
Diaphragm.
50 c.c.

FIG. C.—Sectional drawing of thoracic wall and diaphragm at level of 8th rib in midscapular line, showing air-tight empyema dressing, tube, and collecting bulb in position.

FIG. D.—Photograph of patient with empyema dressing, tube, and collecting bulb in the position shown in diagram. This dressing should be adjusted under positive pressure and the collecting bulb sealed with rubber cap toward the end of expiration.

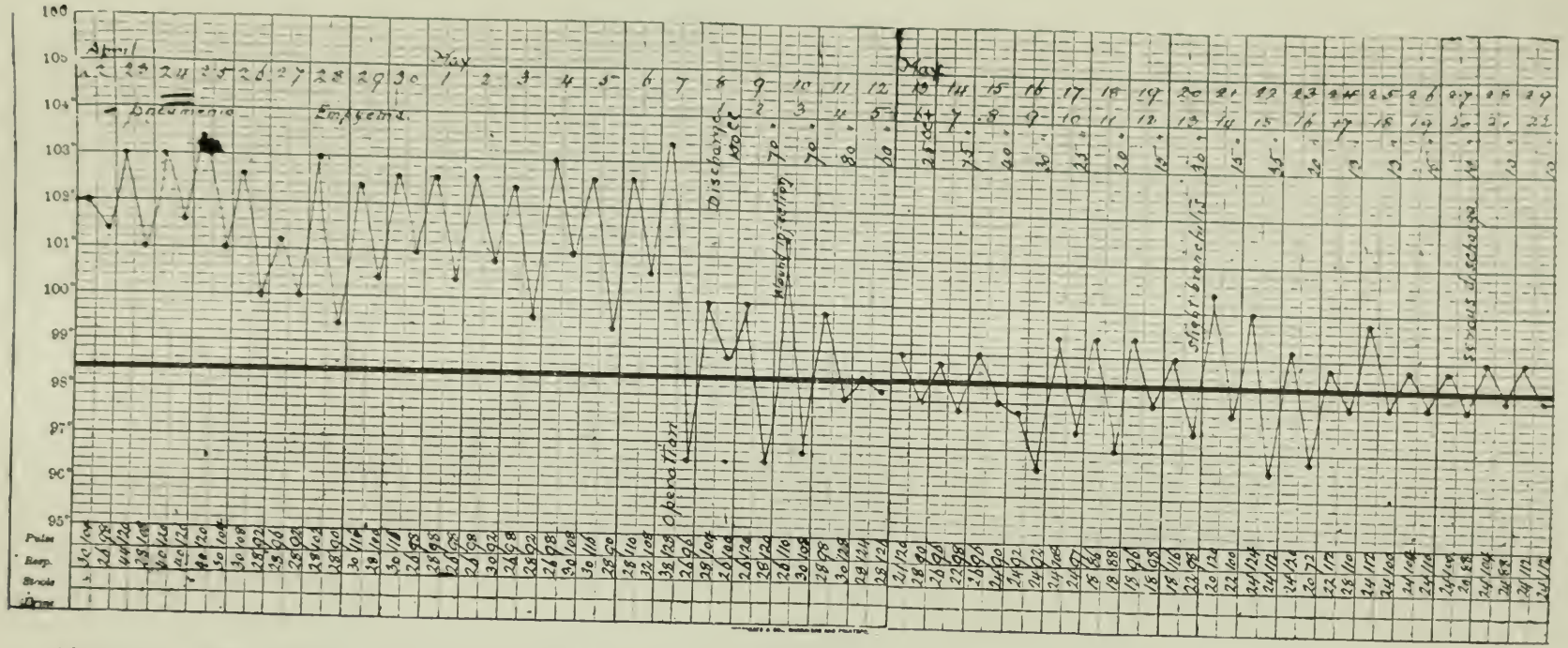
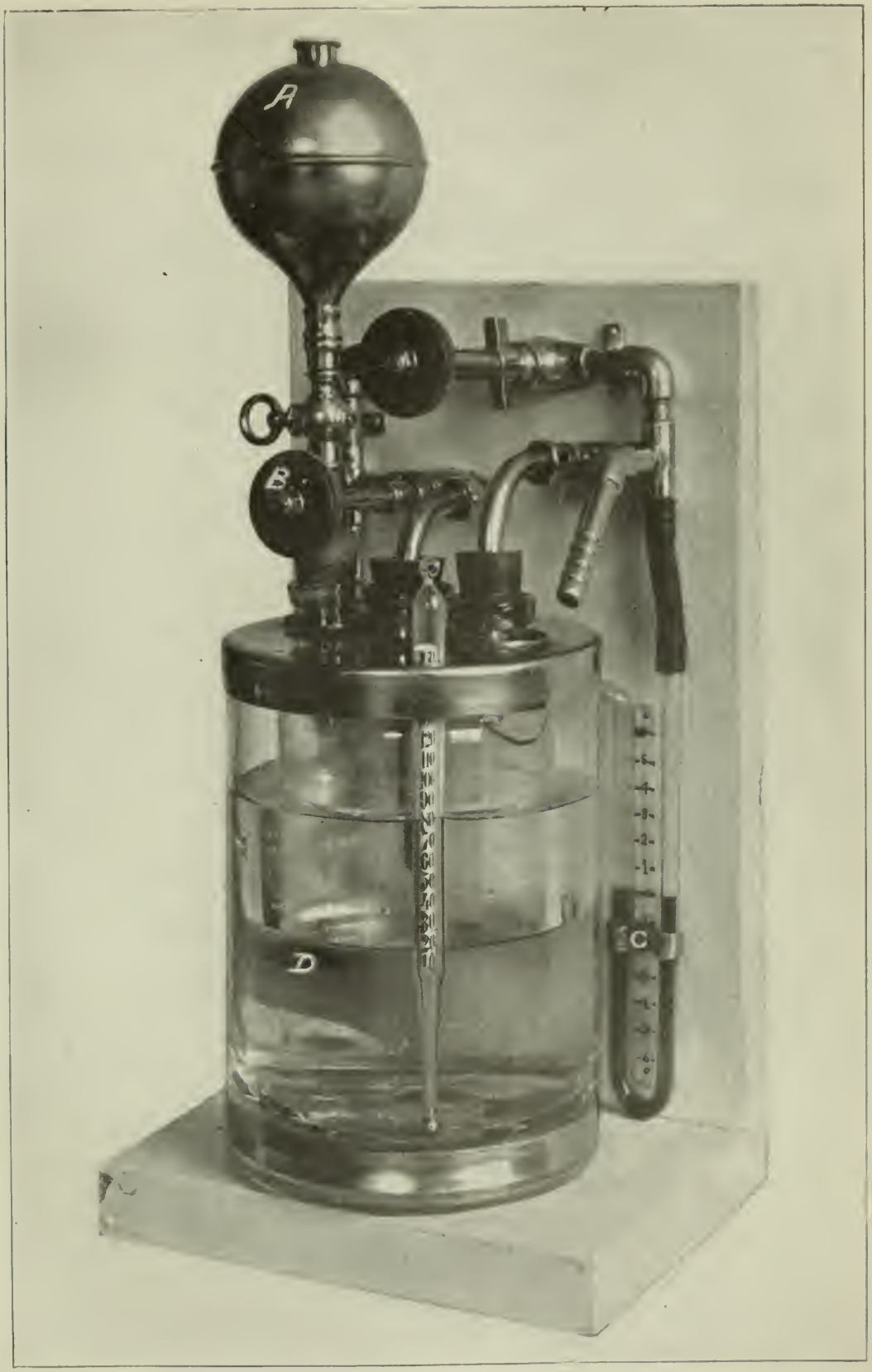


Chart from case of pyopneumothorax in girl aged fifteen, with complete collapse of the left lung of eight days' duration. The bronchial communication had closed at the time of operation, and while hypertension (15 mm. Hg.) corrected the mediastinal deflection, it failed to expand the lower lobe. Obliteration of this large cavity was effected under constant negative tension in twenty days through expansion of the upper lobe and approximation of the mediastinum, diaphragm and chest wall, the lower lobe remaining in an atelectatic condition.

Mask for the human. (a) Metal ring for retaining inner rubber flange. (b) Rubber face pad showing inner rubber flange. (c) Metal form with air inlet and outlet, the latter controlled by a thumb screw. (Metal form devised by Samuel Robinson).



Portable apparatus for controlling air pressure, combined with ether segment for the automatic administration of the anæsthetic. (a) Ether lock for replenishing ether supply without stopping fan. (b) Valve to ether segment. (c) Manometer. (d) Water jacket and thermometer. This apparatus is a modification of that devised by Dr. Samuel Robinson, of Boston.

and pericardium are not infrequently displaced toward the sound lung. Under such conditions, each inspiratory act results in the deflection of the mediastinal septum and collapsed lung toward the sound side in response to the negative tension produced on that side during inspiration. On consideration, it is quite evident that the mediastinum and exposed viscera must tend to move away from the cavity so long as the tension within the cavity remains greater than the average intrapulmonic tension. This fact partially explains why, in long-standing cases, the collapsed lung fails to regain to any extent its functional activity. In these cases the empyæmic cavity is eventually obliterated by the formation of scar tissue within and, through its contraction, the approximation of the various anatomical structures forming the boundaries of the cavity, that is, the mediastinum, the diaphragm, and the chest wall. We are all familiar with the resulting deformity. In the fact that the mediastinum tends to oscillate towards the sound lung during inspiration, we have the explanation of the cyanosis and rapid respiration so frequently present after thoracotomy for empyæma. An inspiratory deflection of the mediastinum toward the sound lung must necessarily nullify, in direct proportion to its degree, the end result of inspiration by lessening the area and amplitude of infundibular inflation.

With the use of differential pressure and the application of an air-tight dressing, such as the one which I have devised (Figs. C and D), not only is the mediastinal deflection reduced and the cavity thereby diminished in size, but the air within the abscess cavity becomes negative in tension during inspiration, and, in consequence, the mediastinum and pericardium tend to be further deflected toward the cavity and the collapsed lung to expand in the same direction. An immediate result of such a method of treatment is the prompt relief of the cyanosis. Subsequently, day by day, there is an appreciable diminution in the size of the cavity. Not only does this dressing do away with the foul odour in the sick room, but, as will be seen by the chart, the amount of discharge may be accurately tabulated. *The collecting bulb in this way becomes an instrument of precision.* If the discharge shows a gradual decrease and the temperature remains normal, one may be satisfied that there is no pocketing or retention of pus. On the other hand, if there is a rise in the temperature curve, a definite knowledge of what the amount of the discharge should be may give one a clue to the cause. Apart from the curtailment of the period of disability, the absence of odour and of pain and discomfort of prolonged dressings, the earlier restoration of the collapsed lung to its normal respiratory activity may remove to a large extent the danger of a subsequent tuberculous infection.

REFLEX NASAL NEUROSES.

BY

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Under this heading may be included:—

a. Hay fever.

b. Asthma.

c. Paroxysmal sneezing.

Hay fever, also known as vasorhinitis, hay asthma, rose cold, pollen catarrh and autumnal catarrh is a comparatively new disease. It is a disease of the Anglo-Saxon race. The first description of it was by Bostock in 1819. Education and civilization predispose to the affliction. The wealthy and the leisured class are those most affected. Brain workers and town dwellers are frequent subjects. Children and country folk are nearly exempt. Morell MacKenzie went so far as to say that the disease is practically unknown in the ordinary hospital patient. Since Bostock's time there have been many writers on the subject and pre-eminent among them are such names as Wyman, Blackley, Dunbar, Hemholtz, and Beard. As the most of these men suffered from the disease themselves, they naturally had a good opportunity to study its etiology and treatment. In 1873 Blackley proved quite conclusively that the disease is caused by the pollen of certain flowering grasses and cereals. Also that the mildness or severity of the malady in any particular season depends on the amount of pollen in the atmosphere.

ETIOLOGY:

Exciting Causes:

If pollen of certain flowers and grasses come in contact with the nasal mucous membrane of susceptible individuals an attack of hay fever follows immediately. The attack soon passes off when the person is removed from the pernicious influence. Ragweed and golden rod are particularly prone to produce an attack. The exhalations of certain animals such as dogs, cats, rabbits and horses may precipitate an attack. Sudden changes in temperature may produce the disease in the susceptible. Summer dust, that is dust that contains pollen is also a cause. Strong light has been known to bring on an attack of hay asthma in the hay fever season in susceptible individuals.

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Predisposing Causes:

Almost every nasal abnormality will produce this disease. Amongst these may be mentioned:

Hypertrophic rhinitis.
Polypi.
Deflected Septum.
Spurs.
Adenoids.
Synechiae.

However, more frequently the nose and naso-pharynx is perfectly normal as far as appearances goes. In these cases on cereful investigation it may be found that there are several areas on the mucous membrane. These sensitive areas vary in different individuals, but a favourite site is an area on the septum about the size of a five cent piece, opposite the anterior portion of the middle turbinate. This place on the septum is congested and swollen. On probing it the patient usually sneezes or coughs. Tears usually flow from the eyes profusely. Another site for a sensitive area is the anterior end of the inferior turbinate and just beneath it, on the floor of the nose.

The general health has a great deal to do with the etiology of this disease. The individuals are of a neurotic disposition. and may have had sometime in their life manifestations of hysteria or neurasthenia. They frequently have urticaria. Gouty and rheumatic patients are especially subject to the disease. Many hay-fever patients can tell to a day when their unusual attack will come. An artificial rose has been known to bring on an attack. The neurotic element in the disease is manifest by such facts.

Conditions necessary to produce an attack:

1. Hypersensitive areas in the nasal mucous membrane.
2. Irritable condition of certain nerve centres.
3. Pollen in the atmosphere.

Pollen produces the disease in two ways.

1. Mechanically:

   Under a microscope pollen is shown to have many spiny protuberances. These sharp points irritate the sensitive areas in the nasal cavity.

2. Chemically:

   Inside the pollen grain is a substance that when moistened by the nasal discharges resembles an enzyme. This substance then acts as a chemical irritant.

The disease lasts during the flowering season of plants which is from

about the middle of June to the end of September. The disease is unknown on the ocean.

Symptoms:

There is no mistaking the disease. The afflicted person on rising in the morning will have a fit of sneezing. This may last anywhere between a few minutes and an hour. The sneezing part of the disease may then be over for the day. Occasionally there may be another attack in the evening. The paroxysm of sneezing is immediately followed by a profuse watery discharge and nasal obstruction. The eyes become itchy, the lids are red and œdematous and then lacrymation begins. Photophobia is frequently present. The head seems to be generally congested. Headache and malaise are soon followed by profound prostration. The duration of the disease varies with the individual and the particular kind of pollen to which the person is susceptible. Patients who suffer for years with hay fever are likely to develop asthma later on in life.

Prognosis:

The disease is not dangerous to life, but it prevents the afflicted one from enjoying the best three months of the year. Seventy per cent. of the cases may be cured, while the other thirty per cent. can be greatly relieved. It is much easier to prevent an attack in a susceptible individual than to cut short an attack that has been going on for some time.

Pathology:

1. True variety: Where the nose and naso-pharynx is apparently normal. Sensitive spots may be detected in many different areas; nearly every author on this disease has a particularly sensitive area that he has discovered. In testing for sensitive areas try and imitate as closely as possible. Apply a little absorbent cotton to a probe. Then moisten the cotton with some mild irritant, such as a weak solution of nitrate of silver. The touching with the probe does the mechanical part, and represents the spiny proturberances of the pollen, while the nitrate of silver does the chemical part and represents the enzyme of the pollen.

The tubercle of the septum is the area that I have found most sensitive. Lloyd finds the most sensitive spots high up and far forward, near where the alar cartilages meet the septum. Sensitive spots have been noted far back and high up on the septum. Both the anterior and posterior ends of the inferior turbinate are often markedly tender to touch. If they are much enlarged they should certainly be removed

2. Pseudo variety: Where some pathological condition is found in the nose or naso-pharynx. Such conditions as the following may cause the disease:

Hypertrophic rhinitis.
Polypi.
Adenoids.
Spur or deflected septum.
Sinus disease.
Synechiæ.
Foreign body.

Not every small spur of the septum causes the disease. But if the spur is large and presses on the outer wall of the nose, it may be causing just sufficient irritation to bring on the attack. Small nasal polypi are more likely to cause the disease than large ones, because it is easier for small ones to change their position in the nose, and in so doing irritate the mucous membrane.

Treatment:

Remove the cause and you cure the disease. Hay fever is never present on the ocean. The disease is usually absent in mountainous districts. Frequently patients who have hay fever in America find it absent in England and vice versa.

Constitutional treatment is very necessary. Good tonics, such as iron, strychnia, arsenic and quinine are useful. Where there is a strong element of neurosis present valerianate of zinc is good. In rheumatic patients, aspirin, grains ten three times daily should be ordered.

For the true variety: The proper use of the galvano-cautery is nearly a specific. The more neurotic the individual the more successful will be this treatment. It is not the idea to destroy mucous membrane but just to touch sensitive spots. The treatment may be regarded as empirical. Francis explains it by saying balance is restored to the nerve centres.

How to use the cautery: The nose must first be thoroughly cocainized with 10 per cent cocaine. Apply this on an absorbent cotton pledget, press it nearly dry after removing it from the solution of cocaine. Ten minutes should be allowed for the cocaine to act. Remove the pledget of cocaine, and then dry the nose with dry absorbent cotton. This prevents smoking during the act of cauterization.

If using the cautery on the turbinates the point should be of a cherry red colour; if touching sensitive spots on the septum a white heat is best: be sure and never allow the cautery to burn contiguous surfaces, for synechiæ will surely form. Do not cauterize both sides of the nose at one sitting. Never cauterize the posterior part of the septum or the posterior end of the inferior turbinate. Make it a rule never to cauterize an area that you cannot see while the cautery is acting. The middle turbinate should not be cauterized. The mucous membrane and the peri-

osteum are here very closely blended. Meningitis and death has been known to follow the simple cauterization of the middle turbinate.

For tubercle of septum: After cocainization draw the cautery point across the middle of the tubercle of the septum. The line should be ⅜ inch long. In a week do the other side. This may have to be repeated two or three times before the disease is under control. If sensitive spots are found in other situations, treat them in the same manner. Frequently a great deal of relief is obtained by drawing a deep line with cautery over the anterior end of the inferior turbinate. It fixes the mucous membrane to the periosteum.

Put a small piece of absorbent cotton in the nostril after cauterization and ask the patient to remove it in a few hours. It prevents dust and pollen entering the nose and coming in contact with the raw surface. Do not cauterize sufficiently deep to cause epistaxis.

For sensitive areas at the back of the septum and on the posterior part of the outer wall of the nose use the following:

First apply cocaine 5 per cent to the area. Then by making a brush with a small piece of absorbent cotton on a wool carrier apply carefully bichloride, (1-1000) or the biniodide of mercury, (1-20).

Following the painting, congestion, sneezing, lacrymation, come on, while catarrhal symptoms remain about three days.

If the galvano-cautery is not at hand the best chemical caustic is trichlor-acetic acid. First cocainize the nose and carefully apply it to the sensitive areas. Chromic acid is a dangerous caustic.

Operative Treatment:

If the inferior turbinate is enlarged and œdematous so that the nose is nearly always obstructed, the anterior and posterior end of the turbinate should be removed and in properly selected cases the whole inferior turbinate may be beneficially removed. The ordinary results do not follow complete turbinectomy in hay fever patients, such as the formation of dry crusts in the nose and naso-pharnyx. However, it is only rarely that such a radical measure is necessary.

Cocaine or cocaine and adrenalin should not be used for this disease. It only gives very temporary relief at best, and it ruins the tone of vaso-motor nerves going to the erectile tissue of the nose, so that the ultimate result is very bad.

If there is only a slight nasal obstruction and the other symptoms of hay fever not marked, the following recipe gives great relief and acts as a tonic to the vaso-motor nerves.

For a nebulizer:

℞ Menthol grs xxx.
Cocaine grs x.
Ol. amygdalæ ℥ss.
Paroleine ad ℥ i
Sig: Use three times daily for each nostril.

The small amount of cocaine in this case, acts as stimulant to the nerves.

Follantin:

Dunbar a few years ago came forward with a theory that hay fever was a toxic disease, and should be cured by a toxin. He prepared an antitoxic serum and during the last 5 years it has received a fair trial, but its results are discouraging. It has helped some, but with the great majority of patients it has been useless.

It comes in two forms; a liquid that may be instilled into the eyes, and a powder to sniff up the nose.

The Maori Cigarette:

These are very useful, and if about 6 daily are smoked a great deal of relief is obtained. They contain no morphia and were first used in New Zealand.

Diet:

Should be nutritious and easily digestible. Stimulants should be avoided. Late dinners are bad.

Hot and strong coffee is most useful. Give it on an empty stomach and until you obtain its physiological action.

Asthma.

Asthma is produced by a spasm of the involuntary muscular fibres of the smaller bronchi. Associated with this condition there is a marked hyperæmia of the respiratory mucous membrane. Most asthmatics show signs of instability of the central nervous system.

Bosworth many years ago claimed that all asthma was due to nasal obstruction. Since that time, careful research has shown that about 30 per cent. of asthmatic patients show signs of gross nasal disease. In the other 70 per cent., although there may be no visibly pathological condition present, yet on careful examination it can be shown that these patients have very sensitive areas on their nasal mucous membranes. Cocaine applied to these areas usually relieves the spasm in short order, thus showing that asthma is due to a nasal reflex.

Treatment:

1. If any pathological condition is present in the nose or naso-pharynx,

cure it, and the asthma is at an end; nasal polypi are frequently found Partial removal of the polypi, with ethomoidal disease present, often makes the asthma worse. However, if all polypi and diseased ethmoid are removed, the asthma is often cured. Adenoids, nasal spurs deflected septums, synechiæ have all been known to produce asthma.

2. Where there is associated with asthma a nasal aura. In such cases asthma is very amenable to treatment. The attack may be preceded by a fit of sneezing, nasal obstruction or an itchy condition of the nose. Treat the conditions as was recommended for hay fever, and the results are usually very satisfactory.

3. Where no nasal pathological condition is present. Francis recommends to treat all these cases by the galvano-cautery to the tubercle of the septum. About 60 per cent. of these cases can be cured in this manner, the other 40 per cent. are greatly relieved.

Much the same as in hay fever, cocainize the nose, and with cautery at a white heat, make the smallest possible touch to the tubercle of the septum. In a week do the other side and continue the treatment for several times if necessary. The older method of free cauterization does harm rather than good. Frequently patients say that they have felt something give in their chest and afterwards they breathe much better. The general management of the cases is the same as in hay fever.

General Treatment:

Tonics are good. Iron and strychnia are usually indicated. Potassium iodide and arsenic often do good.

The fumes from the following powder has often given refief:

℞ Potass nitras ℥ss.
Pulv. anisi fructus ℥ss.
Pulv. Stramonii fol. ℥i.

In the *Lancet,* May 21st. 1910, Dr. Brian Melland has a very interesting article on asthma and its relief by hyperdermic injections of adrenalin.

It has been known for the last few years that the action of adrenalin is the same as stimulation of the sympathetic nervous system.

However, the stimulation of the cranial and sacral visceral nerves is just the opposite, that is, a relaxation of the muscles supplied by these nerves. The action, then, of adrenalin on the vagus is an inhibitory action, and as the vagus supplies the bronchial muscles, its stimulation causes a relaxation of these muscles, and so the asthmatic spasm passes away.

Method of administering the drug: To get the proper effect it should

be given hypodermically, 5 to 15 minims of the adrenalin chloride solution (1-1000).

Its action may be noted by the dilatation of the pupils; the face becomes pale; the palpebral fissures widen, and the singing noise in the chest ceases.

Paroxysmal Sneezing.

Sneezing has always been looked upon as a sign of good health, but excessive paroxysmal sneezing may arise from:

1. Nasal polypi.
2. Adenoids.
3. Hypertrophic rhinitis.
4. Pollen, especially in the case of persons of neurotic temperament.

Such people frequently have periodic sneezing fits. They have a very sensitive nasal mucous membrane.

Treatment:

Treat nasal abnormalities. Use constitutional treatment, and tonics. Dont blow the nose too frequently. Avoid spices, mustard, pepper, etc.

Astringent sprays to the nose are often useful. Redundant turbinates should be reduced by the cautery. The old fashioned snuff often cures the disease.

ON PELVIMETRY AND ABDOMINAL PALPATION.

BY

Herbert M. Little,

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While the obstetrician without a pelvimeter may be like a physician without a stethoscope, one too often forgets that the tyro with a stethoscope may, in the over-estimation of some obscure murmur or of some slight alteration in breath sounds, go farther astray than the skilled physician who has but felt the pulse or carefully observed the front and back of the chest. The average manipulator of a pelvimeter gains less from its use than the physician from inspection in pulmonary, and from palpation in cardiac cases.

The four measurements of external pelvimetry, the distance between the anterior superior spines of the ilia, the maximum distance between the crests of the ilia, the distance between the trochanters, and finally that between the spine of the last lumbar vertebra and the anterior sur-

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face of the symphysis pubis, are of little use in estimating the exact size of the true pelvis. Their value lies rather in what may be inferred from their relation one to another. True, the intercristal measurement is supposed to be roughly twice that of the transverse of the pelvic brim, but, this, and the suggestion of rickets from an alteration in the ratio of the interspinal and intercristal measurements is all that one obtains from such a superficial examination.

The real object of pelvimetry is to find, if possible, what, if any, effect the pelvis may have on the approaching labour; a matter difficult in that 80 per cent. of labours will end spontaneously in spite of pelvic contraction.

In the estimation of the relation of head to pelvis a pendulous belly in the last month of the pregnancy of a primipara is of far more diagnostic value than many pelvimeters. For accurate information, earlier than this, why not measure the true pelvis at once? A costly armamentarium is unnecessary. For example, if the thumb be placed against one spine and the hand then outstretched, the little finger will just fall short of the opposite spine, provided the distance between the spines is normal. Again, the two index fingers placed upon the iliac crests backward from the spines will at once show whether the relation between the interspinous and intercristal measurements is normal. One vaginal examination made for the diagnosis of pregnancy should suffice for the measuring of the diagonal conjugate. If the distance from the promontory to the subpubic ligament is greater than that from the tip of the second finger to the metacarpophalangeal joint of the first there is no flattening of the pelvis. These methods though not exact are sufficient, for remember that absolutely exact pelvimetry is rarely a necessity, and that two specialists will invariably differ in their measurements even when using the same instrument.

A prevalent idea that pelvic contraction is always, or usually, associated with the pelvic inlet, is difficult to combat. The woman who walks like a man will be more or less unfitted for maternity, not by instinct but by her pelvis. All of us know that the male pelvis differs from the female pelvis, yet how few apply that knowledge to the interpretation of glaring obstetric facts. True funnel pelves are rare in Canada, pelves of the male type with narrow subpubic angle and short bi-ischial diameter are unusually frequent. The effect of the narrow angle upon the extension of the head has long been noted, but far too little is taught of the effect of such labour, particularly upon the perineum. Remember that the distance between the cephalic curves of the blades of an ordinary forceps is 8.5 cm. when closed, and then consider

the relation of such a forceps to the perineum when the transverse diameter of the pelvic outlet is 8.5 cm. or less. It will then be evident that perineal tears are not always the result of carelessness and that complete tears are usually the result of anatomical deformity.

A recent exhaustive article by Professor Whitridge Williams has dealt with dystocia due to the funnel-shaped pelvis. It is obvious that when the distance between the bi-ischial line and the tip of the sacrum, or of the coccyx if that be ankylosed, is shortened proportionately to the bi-ischial diameter, trouble must ensue. Fortunately such uniform contraction at the outlet is rare in this country, and I have yet to see in a Canadian woman a pelvis contracted to such an extent as to make birth impossible. Lateral contraction, on the other hand, is unusually frequent, and accounts for a great proportion of low forceps operations and for a still greater proportion of perineal tears.

In addition to pelvimetry the other special feature of an antepartum examination is the relation of the fœtus to the birth canal. In by far the greater number of labours, the long axis of the body of the child is parallel to the long axis of the body of the mother, and the head first approaches the brim; further, the head is usually flexed. Leaving aside for a moment the normal relation of the child to the birth canal, the lowermost pole of the head, or the sacrum when the breech comes first, is described as in relation to either the anterior or posterior quadrant of the pelvis on either right or left side.

Now, since the sacrum in one instance, and the lowest pole of the flexed head in another, may be considered as extremities of the vertebral column, the relation of the back of the child to the right or left side becomes of the greatest importance; and since the condition of flexion presupposes the bulk of the head on the opposite side of the median line of the body to the back, the importance of finding the back is enhanced. Moreover, the situation of the bulk of the head is of double importance since it gives a clue to the whereabouts of the most dependent portion of the head, the two being necessarily diametrically opposed one to the other.

Long axis, back, bulk of head,—the determination of these three features is the entire secret of diagnosis, a matter of little difficulty, yet obscured by most obstetricians, thanks to an unfortunate translation of the excellent French of MM. Farabœuf and Varnier. More time and worry have been fruitlessly wasted by students over the various definitions of "presentation," "presenting part," "position," "attitude," etc., than would have made each an expert diagnostician.

Proceed as follows:—(1). Note the relation of the long axis of the

child (uterus) to that of the mother's abdomen, and find which fœtal pole is at the brim. A simple laying on of hands will be sufficient for the first, while slight practice, aided by a recollection that nineteen times out of twenty it will be the head, simplifies the second.

(2). Find the child's back. Inspection will often suffice, particularly if the child's limbs be excited into action by flicking the abdomen with the fingers or a little cold water. An excellent diagnostic method is as follows:—Steady the uterus in the median line, i.e., directly over the vertebral column, and make firm pressure with the ulnar surface of the extended hand in the median line. The uterus will then be displaced towards the side to which the back is directed. Confirmatory evidence is obtained by the palpation of fœtal members when their movements cannot be perceived.

(3). Locate the bulk of the fœtal head. This is important only in head presentations. Grip the head or palpate it with the outstretched hand, and note, by reference to the middle of the symphysis, on which side it bulks largest. If the bulk is on the opposite side from the back, again, nineteen times out of twenty, the head must be flexed.

(4). Note whether the most prominent part of the head lies far back in the pelvic inlet or well towards the symphysis. If it be foward the dependent portion must be back and conversely.

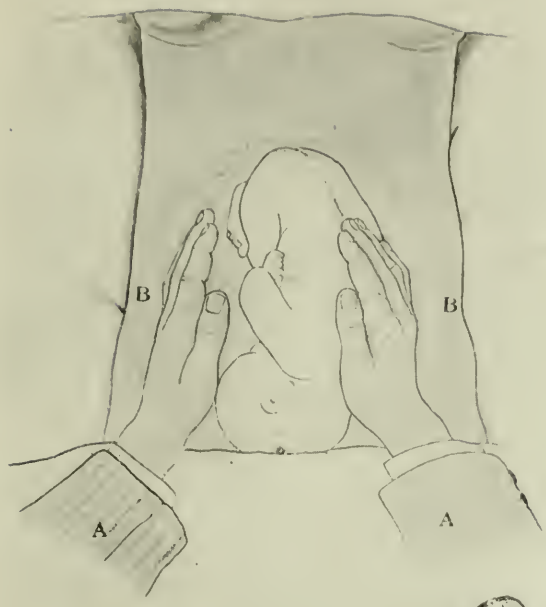
The diagnosis is expressed in terms of the relation of the lowest pole of the fœtus to one or other side of the mother's pelvis in either its posterior or anterior quadrant.

In flexion the occiput "O," in extension the chin "M," and in breech the sacrum "S," is either directed to the right or left and is either anterior or posterior: occiput left anterior, O. L. A., or L. O. A., etc.

Where the child lies transversely there is no mechanism of labour, the situation is abnormal and must be treated accordingly.

The maximum intensity of the fœtal heart may be taken as confirmatory evidence of any diagnosis. Remember that the heart is usually best heard over an area corresponding to the angle of the left scapula which in breech presentations lies above the level of the umbilicus. In L. O. A. and R. O P. it is best heard over an area midway between the umbilicus and the left and right anterior superior spines respectively. In R. O. A. it is heard near the median line, and in L. O. P. with difficulty in the left flank. The auscultation of the fœtal heart is not an intellectual feat.

The appended diagrams are self explanatory.



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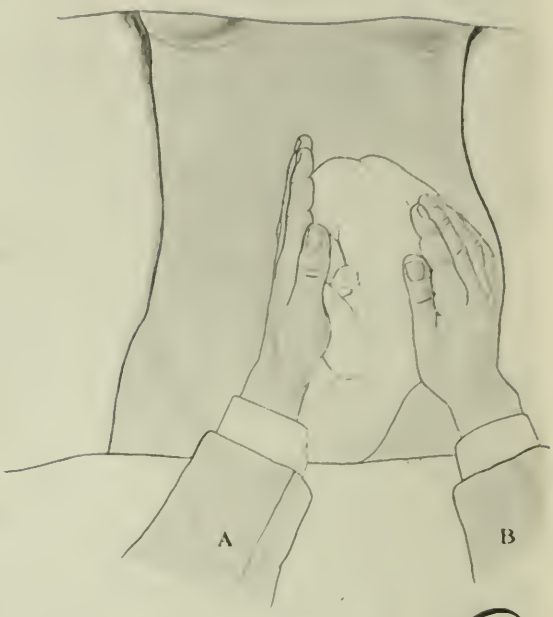

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BEAUMONT AND ALEXIS ST. MARTIN.

BY

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A few hundred years ago Thomas Fuller, in "The Holy and The Profane State," said that "Learning hath gained most by those books by which the printers have lost;" and though, in touching on William Beaumont and his "Experiments and observations on the Gastric Juice and the Physiology of Digestion," published at Plattsburg, in 1833, it is not my intention to dwell upon anything of a financial nature, this thought of Fuller's expresses the idea that a great many of the books which have proved invaluable in the advancement of learning in general, and perhaps of science in particular, are not known and read as much as they deserve to be.

Especially in these days of modern text-books, are we, as students, apt to regard with horror any volume, though it be intimately connected with our work, that has the stamp of a few score years on it, forgetting that in many cases we can in this way read, in simple language, facts and observations which form the groundwork of nearly all our standard works; it is just as Chaucer tells us in the "Canterbury Tales":

> "For out of the old fieldes, as men saithe,
> Cometh al this new corne fro yere to yere,
> And out of old bookes, in good faithe,
> Cometh al this new science that men lere."

What sentiments more enobling than those contained in William Beaumont's "Preliminary Observations?" "I consider myself but a humble inquirer after truth—a simple experimenter," yet these prefaced the description, in a most accurate manner, of a series of unique experiments which required a great deal of patience and work, embracing, as they did, observations on the human stomach, extending over a long period, and which enabled him to give what was perhaps the first real demonstration of gastric juice outside the human body, as well as its proper description.

In the winter of 1806-7, William Beaumont, then in the twenty-second year of his life, being filled with a desire to seek fame and fortune, set forth from his home in Lebanon, Conn. Among his modest belongings was a horse, as well as a cutter, and by means of these, he jingled over the western part of Massachusetts and Vermont. In the spring of 1807,

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Read before McGill Medical Society.

the charms of the little town of Champlain, N.Y., catching his eye, he settled there and soon the people placed him in charge of their school. This position to him, as to so many other great men, was but a stepping-stone; and he devoted his leisure hours to the study of medical works, borrowed from a doctor friend. Finding his vocation, after a few years, he went to Albany to complete his medical studies and he was so successful that, shortly after the breaking out of the war of 1812, we find Dr. William Beaumont with a commission as surgeon in the United States army.

Of the many opportunities Dr. Beaumont had for acquiring the skill in surgery, which afterwards helped to make it possible for him to save the life of the individual who was the subject of the extraordinary experiments referred to, any one at all conversant with the war of 1812 will realize, but perhaps an extract from his diary regarding the scene in the hospital after the battle of Yorktown may prove of interest:

"The surgeons wade in blood, cutting off arms and legs and trepanning heads, while the poor sufferers cry, "O, my God! Doctor, relieve me from this misery! I can not live!" 'Twas enough to touch the veriest heart of steel and move the most relentless savage. Imagine the shocking scene, where fellow-beings lie smashed and mangled—legs and arms broken and sundered—heads and bodies bruised and mutilated to disfigurement! My deepest sympathies were roused—I cut and slashed for thirty-six hours without food or sleep."

It was some years later that Beaumont was destined, on a certain morning in June, of 1822, to be stationed at Fort Mackinac, Machillemackinac, Mich., to be called on to attend Alexis St. Martin, a robust French Canadian, eighteen years old, employed by the American Fur Company as a voyageur, when on the morning in question, he was accidentally wounded by the discharge of a musket not more than a yard away from him.

A memorial presented to the Senate and House of Representatives by Beaumont describes the wound:

"The wound was received just under the left breast, and was supposed at the time to have been mortal. A large portion of the side was blown off, the ribs fractured, and openings made into the cavities of the chest and abdomen, through which protruded portions of the lungs and stomach, much lacerated and burnt, exhibiting an altogether appalling and hopeless case. The diaphragm was lacerated, and a perforation made directly into the cavity of the stomach, through which food escaped. His life was at first wholly despaired of, but he very unexpectedly survived the immediate effects of the wound, and neces-

sarily continued a long time under the constant professional care and treatment of Dr. Beaumont."

St. Martin's life was saved, and though the stomach wound contracted, the orifice terminated by a natural boundary, and left the perforation, resembling, as Beaumont states, "in all but a sphincter, the natural anus, with a slight prolapsus." Frequent dressings and bandages were of course necessary to retain his food and drink until nature came to his aid, and a small fold or doubling of the coats of the stomach appeared, forming at the superior margin of the orifice, slightly protruding and increasing till it acted so as to completely prevent the efflux of gastric contents when the stomach was full, but was easily depressed with the finger.

At the end of two years, St. Martin, after having practically been cared for during the whole of this period by Dr. Beaumont, who even took him into his own private family in order that he might have proper care and nourishment, had perfectly recovered his natural health and strength, when Beaumont commenced his first series of gastric experiments on him.

It is not within the scope of this paper to give anything like a resumé of these experiments; a few general ideas in regard to some are only possible.

The perforation through the wall of St. Martin's stomach was about three inches to the left of the cardia, near the left superior termination of the great curvature, and of course made the extraction of gastric juice possible. Beaumont did this by placing St. Martin on his right side, depressing the valve within the aperture, and introducing a gum elastic tube, the size of a large quill, five or six inches into the stomach, and then turning him on his left side till the orifice became dependent. The fluid soon began to flow, first by drops, then in an interrupted, and then in a short continuous stream, increased by moving the tube about. The extraction of gastric juice was generally attended by that peculiar sensation at the pit of the stomach termed "sinking," which made it necessary to stop the operation.

The value of Beaumont's obesrvations may be inferred from the following description which he gave of gastric juice, and which has entered into all text books:

"Pure gastric juice, when taken directly out of the stomach of a healthy adult, unmixed with any other fluid, save a portion of the mucus of the stomach with which it is most commonly and perhaps always accompanied, is a clear transparent fluid; inodorous; a little saltish, and very perceptibly acid, Its taste, when applied to the tongue,

is similar to this mucilaginous water slightly acidulated with muriatic acid. It is readily diffusible in water, wine or spirits; slightly effervesces with alkalies; and is an effectual solvent of the materia alimentaria. It possesses the property of coagulating albumin in an eminent degree; is powerfully antiseptic, checking the putrefaction of meat; and effectually restorative of healthy action, when applied to old, fœtid sores and foul, ulcerating surfaces."

"Beaumont's experiments on St. Martin were made between 1825-33, with various interruptions owing to St. Martin having married and returned to Canada for a time, and he was able to correct many of the erroneous ideas regarding digestion, and, in reality, anticipated some of the most recent studies in the physiology of digestion, as contained in Professor Pawlow's (of St. Petersburg) recent work, such as the statement announced by Beaumont that "the gastric juice never appears to be accumulated in the cavity of the stomach while fasting," and again "when aliment is received the juice is given in exact proportion to its requirements for solution."

That the sense of hunger resides in the stomach, Beaumont proved by having St. Martin fast from breakfast time till 4 p.m. in the afternoon, by which time he had naturally become very hungry. He then put in at the aperture three and a half drachms of lean, boiled beef, when the sense of hunger immediately subsided. On introducing two ounces of rare, roasted beef, suspended by a string, into the stomach, regular examination showed a uniform, but very slow process of digestion, confined entirely to the surface of the meat, which illustrates the necessity of a perfect comminution of the articles of diet.

The importance of endeavouring to keep one's self in a placid state of mind, especially during the period of digestion, Dr. Beaumont clearly showed when, about four hours after St. Martin had breakfasted on fat pork, bread and potatoes, and had just had a fit of violent anger, a portion of the stomach contents was taken out, in a complete chymous state, without any entire particles of food to be seen. It was of a milky, or rather thin, gruel-like consistence, and considerably tinged with yellow bile, the presence of which was believed to be the effect of anger, as, in a healthy state of the stomach, and an equable frame of mind, this substance had seldom been found in the stomach.

On one occasion when St. Martin had breakfasted on venison steak, cranberry jelly and bread, washed down by a pint of coffee, Beaumont found that in one hour and thirty-five minutes the breakfast was all digested, the stomach empty and clean, and everything had passed through the pylorus, the rapidity of digestion depending principally on modera-

tion in quantity and the digestible properties of foods used, but Dr. Beaumont felt sure venison was the most digestible of any diet of the fibrinous kind.

From his experiments he confirmed the general opinion of medical men that vegetables are less easily disposed of by the gastric organs than animal or farinaceous substances.

In the course of his experiments, Dr. Beaumont observed that morbid changes in the condition and appearance of the interior of the stomach could not, in most cases, have been anticipated from any external symptoms, and their existence was only ascertained by actual ocular demonstration, and it may be inferred from this to what extent the stomach, perhaps the most important organ of the animal system, may become diseased without manifesting any external symptoms of such disease, or any evident signs of functional aberration. Beaumont found that these diseased appearances frequently presented themselves. They generally, but not always, succeeded to some appreciable cause. Improper indulgence in eating and drinking, was the most common precursor of these diseased conditions of the coats of the stomach. The free use of ardent spirits, wine, beer, or any intoxicating liquor, when continued for some days, invariably produced these morbid changes. Eating voraciously, or to excess; swallowing food coarsely masticated, or too fast; the introduction of solid pieces of meat, suspended by cords into the stomach; or of muslin bags of aliment, secured in the same way, almost invariably produced similar effects, if repeated a number of times in close succession.

Experiment after experiment might be mentioned to give some idea of the enormous amount of work done by Dr. Beaumont in connexion with digestion. I have only mentioned a few which struck me as particularly interesting, and other important points which Dr. Osler briefly enumerates as being clearly brought out by Beaumont were:

1. The confirmation of the observation of Prout that the important acid of the gastric juice was the muriatic or hydrochloric.

2. The recognition of the fact that the essential elements of the gastric juice and the mucus were separate secretions.

3. A more accurate study of digestion outside the body.

4. The elucidation of many minor points of great importance, e.g., the rapid disappearance of water from the stomach through the pylorus.

5. The first comprehensive and thorough study of the motions of the stomach, and lastly, the digestibility of different articles of diet in the stomach, which remains to-day one of the most important contributions ever made to practical dietetics.

It is somewhat surprising that going through life with a wound such as he had, Alexis St. Martin should in the quiet little French Canadian village of St. Thomas de Joliette, surrounded by his wife and family, reach the ripe age of 83.

As for Dr. Beaumont, after having enjoyed a large practice in St. Louis, Mo., he died in 1853, at the age of 68, from the result of an accident almost thirty years before St. Martin, and to my mind no more glorious epitaph could have been selected for this distinguished physiologist than his own words:—"A humble enquirer after truth—a simple experimenter."

INTENSE THROMBOSIS OF THE CENTRAL RETINAL VEINS WITH RECOVERY OF NORMAL VISION.

BY

GEO. H. MATHEWSON, M.D., Montreal.

On March 6th, 1908, I was asked to see H. C. P., a man 38 years of age, who complained that he was almost blind in the right eye. The history of the trouble was as follows:—On February 20th, while looking out of the window, he suddenly became blind in the right eye. He previously never had anything wrong with either eye. He had no pain in the eyeball, and has none now, nor any other symptoms beyond the blindness.

Previous History.—Right leg was amputated at junction of middle and upper third of the thigh at the age of eight, on account of what was probably osteo-myelitis. The stump is healthy. Circulatory system is normal, except that the radial artery is somewhat thickened. Temporal arteries normal. Heart normal. Urine normal. There is great swelling of the optic disc (5 dioptres), but still one could see a deep physiological cup. There is extreme congestion and tortuosity of veins. The tortuosity is in both the plane of the retina, and at right angles to it. Where the arteries can be seen they are somewhat narrowed. There are a great number of hæmorrhages, nearly all flame-shaped, arranged in a stellate manner about the nerve as a centre. There are many other hæmorrhages occurring in an irregular manner about the peripheral part of the retina. Two patches of exudate were to be seen. Nothing special is to be seen in mascular region, no pallor, nor red spot. R.V.= Fingers at 12 feet. L.V. 6/6. March 15th.—Blood showed red cells, 4,830.000. White cells, 6,200. Hæmoglobin, 100. Calmette's tuberculin test in the left eye gave negative results.

On April 5th, 1908, I found the number of hemorrhages reduced, but that there was still great œdema of the retina.

Vision not improved. The patient was lost sight of shortly after this time.

On February 19th, 1909, I saw him again and found R. V. 6/6, L. V. 6/6. Right fundus shows no abnormality beyond one or two slate coloured spots, probably on the site of former hæmorrhages.

I wish to thank Dr. Finley for giving me an opportunity to study this case.

A CASE OF TACHYCARDIA.

BY

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The following are notes of a case that, alarming as it seemed at first, appears to be one of hysterical tachycardia. The patient was a multipara of 26 years, small, well-formed, well-nourished, whose organs at previous examinations have been found to be normal. Her complaints were that her heart "pounded fiercely and terribly fast." Eight days after her confinement I was called to see her in haste; as she lived far away, I arrived four hours later and found her pillowed up in bed, her eyes "starting," palpitation of the heart being plainly visible through the coverings She was sweating profusely, but her respirations were not very rapid, and she had no cyanosis; her temperature was 99⅕°. I could not count the pulse, but it was at least 200, small and regular. Inspection of the thorax showed a visible impulse from the third rib downwards to four inches below the nipple, and from one inch to the right of the sternum to the posterior axillary line; percussion showed dilatation to the left to one inch beyond the nipple. On auscultation, the sounds were replaced by a tumultuous humming noise, heard alike over base and apex and in the axilla.

The patient's family history indicates that her mother belongs to an intensely neurotic family, and is herself of unstable nervous temperament. The history of the present illness indicates that eight days before onset the patient was delivered of a still-born child; subsequent to labour for two days the pulse rate was quickened, though not greatly. Twelve hours after the onset, the pulse was 120 and the heart sounds were audible. Digitalis, and morphia (gr. ¼) twice proved of no effect. Potassium bromide (grs. xx) seemed responsible for the good result. On the same afternoon, she was in a comparatively normal state, but at precisely the same time on that afternoon, the tachycardial attack recommenced. Without going to see the patient, a single dose of bromide (grs. xx) proved sufficient; during the subsequent week two slight attacks supervened.

The cause inducing the first attack was a severe fright; and it appears that at the age of 15, the patient suffered from a somewhat similar attack.

NOTES ON HUMAN TRYPANOSOMIASIS.

BY

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I.—*Observations on the Course of the Disease.*

This note is concerned with the history of five cases of trypanosomiasis in Europeans. Two of these cases have been reported already;[1] three of them are now mentioned for the first time. They are published now in order that they may assist in determining the constancy with which the symptoms associated with human trypanosomiasis occur, and in order that the usual nature of the course and of the length of the disease may be ascertained.

The symptoms reported by Dutton[2] in the first recorded case of human trypanosomiasis have recurred with wonderful constancy in all the subsequent cases. Weakness, loss of energy, easily induced fatigue, breathlessness, wasting, irregular periodic fever, rapid pulse, erythemata and other vasomotor phenomena, and enlargement of the lymphatic glands, have almost always been present. In addition, other signs, such as affections of the eyes, hyperæsthesia, tremors and other nervous symptoms have occasionally been observed. A change in character, sometimes almost amounting to aberration, has been observed in several cases. Pathological sleep is an unusual symptom in Europeans, as it is in Africans; but it has been seen in several instances.

African natives almost always have malaria and they are infected by filaria, intestinal worms and other parasites; Europeans are usually free from such infections. For this reason, differential blood counts made in cases of trypanosomiasis in Africans are not accurate; only blood counts made in Europe on Europeans can be relied upon. From such counts, it has been ascertained that an increase of the mononuclear cells is a constant feature of human trypanosomiasis.

Three of the cases reported were treated by thorough dosing with *liquor arsenicalis*. The trypanosomes disappeared from their blood, and the patients were well two, two and three years respectively, after the commencement of their disease. Another case, who was treated by atoxyl, had parasites in his blood almost continually from June, 1907, until February, 1910. At the present time, treatment has been stopped, his temperature has been normal and the parasites have been absent from his blood for four months. Another case, who became infected in 1907, was energetically treated at once by atoxyl and mercury; the parasites

immediately disappeared permanently from his blood and his temperature became normal. He is in good health at present.

The result of the treatment of these five cases, when considered in conjunction with the history of other cases of trypanosomiasis in Europeans, which have been apparently cured, make it almost certain that recovery may occur if the patient be energetically treated, early in this infection, by some appropriate trypanocide and if, at the same time, every care be taken to support general health.

This conclusion is a most satisfactory one, since the invariably fatal results of the first cases of trypanosomasis, in both Europeans and Africans, made it appear as though treatment were hopeless and the disease invariably fatal.

II.—*Auto-agglutination of the Red Cells in Human Trypanosomiasis.*

Kanthack, Durham & Blandford[3] recognized that the red blood cells of experimental animals, which were heavily infected with trypanosomes, frequently coalesced in irregular masses instead of forming rouleaux. The same phenomena occurs in cases of human trypanosomiasis;[4] but it was also recognized that such auto-agglutination of the red cells might occur in cases from which trypanosomes were absent, and that trypanosomes might exist in a patient without the presence of this symptom. In order to determine the importance which might be attached to the presence of this symptom, the blood of 1,406 persons inhabiting the Congo Free State was examined. It was found that while auto-agglutinuation was present in 395 of these persons, trypanosomes were only found in 183 of them; the parasites were also found in 124 persons from whose blood auto-agglutination was absent. From these figures, it is very evident that trypanosomes may occur without accompanying auto-agglutination, and that while many cases in whom auto-agglutination is present may be suspected of trypanosomiasis, still, auto-agglutination may occur without that disease. Twenty-six cases of human trypanosomiasis were constantly observed for periods varying from three weeks to four months in order to determine if auto-agglutination were constantly present. From the records of these cases, it may be concluded that auto-agglutination is almost constantly present in cases of trypanosomiasis of either sex, of any age, and in all stages of the disease. The presence of auto-agglutination, or the degree in which it is present, do not appear to depend directly upon the presence or the number of trypanosomes in the peripheral blood of the patient. Nevertheless, it was noted that on five or six occasions auto-agglutination was absent from patients, in whom it had been constantly present, immediately after the absence of trypanosomes from the blood during a period of several days.

t possible to determine from our records whether auto-aggluticonstantly associated with any qualitative or quantitative n the blood, and no suggestion is offered concerning the nature of the changes which lead to its manifestation. Auto-agglutination was noted in cases of relapsing fever, of "cachexia," of syphilis, and of beriberi. From these observations, it is concluded that auto-agglutination of the red cells frequently occurs in trypanosomiasis, but that it may occur in other diseases and that trypanosomiasis may exist without its appearance.

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NEURASTHENIC CONDITIONS REFERABLE TO THE NOSE AND THROAT.

BY

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In this paper it will be my endeavour to discuss briefly the neurasthenic conditions referable to the nose and throat, and at the same time to consider the possibility that many cases of neurasthenia may owe their origin to, or be aggravated by, associated disease or abnormality of these regions. Though catarrhal and other symptoms of the nose and throat are commonly complained of by those suffering from neurasthenia, it is a matter of surprise how little attention is given these manifestations in the literature of this affection. In many instances no reference to them is made, or, if so, their association is looked upon as of trivial importance or a mere coincidence. On the other hand, one would hesitate in agreeing entirely with North, who according to Packard, considers neurasthenia as of reflex origin from nasal disease, and says that he has never met with a case of neurasthenia in which there was not present some catarrhal trouble.

While we are all familiar with the patients who consult us complaining of headache, a tight feeling across the bridge of the nose, subjective sensation of bad odour, dropping in the throat, a lump in the throat, etc., and upon examination can find nothing to account for these com-

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plaints, may there not be sufficient disturbance to cause symptoms in one case which would be unnoticed in another, or are they simply functional in character? Because a patient is known to be neurotic, one is perhaps apt to regard his complaints too lightly, and overlook some apparently trivial condition which may be a true source of discomfort to a naturally nervous organism.

As the term is frequently misapplied it is well to be clear in our minds as to what constitutes neurasthenia, and not confound it with allied disorders such as hysteria, neuroses, hypochondria, or even insanity. Neurasthenia, as the name implies, is a condition of deficiency or exhaustion of nerve force or debility of the nervous centres (Gould). It may be primary or secondary. That the primary form, though rare, does occur is the general, but not unanimous, opinion. The secondary, or acquired form, which is much the more common, is the one with which we are mainly concerned. In this there is usually a discoverable cause, though symptoms of neurasthenia may for a time mask a more serious organic lesion, such as cardiac, or malignant disease, syphilis, etc. The prognosis of the secondary form is of necessity much more favourable than in the primary, as in the former the cause may in many instances be removed be it of a physical, mental, or moral nature.

It thus behooves us as laryngologists, rhinologists, otologists, or ophthalmologists, to search diligently for such cause, and if we are honestly convinced that by suitable treatment we can improve the patient's condition we should proceed with that object in view and not regard the treatment of every case of neurasthenia as futile.

Granted, then, that our diagnosis of neurasthenia is correct, we must next ask ourselves, are the nasal, pharyngeal, or laryngeal symptoms the result of the neurasthenia and consequently functional, or are they really due to organic trouble and aggravated or even causing the neurasthenia?

Even though the symptoms seem to be clearly functional, great care must be exercised and all evidence of organic disease be excluded before arriving at a conclusion, and thus avoid such mistakes as for instance, regarding headache, or subjective bad odour as functional while the patient is really suffering from sinus disease, a mistake which on more than one occasion has been admitted; or looking upon some perversion of sensation in the throat as functional when it is really symptomatic of some grave central lesion.

As to the importance of disease of the nose and throat as factors in the etiology of neurasthenia, opinion is divided, some considering the slightest departure from the normal as being sufficient to cause

neurasthenia, and consequently demanding operative or other treatment, while on the other hand, there are those who consider even a marked nasal obstruction as trivial and not associated in any way with the neurasthenia, regarding operative or other interference as unnecessary.

In this connexion it may not be out of place to consider what bearing adenoid growths and nasal obstruction may have, if uninterfered with, on the predisposition to, if not the actual cause of neurasthenia, coming on in adolescence or early maturity. When one considers the constitutional disturbances, even grave in some cases, met with in children suffering from nasal obstruction and consequent mouth breathing, one can easily conceive of the nervous system suffering along with the rest of the organism, though not of necessity being alone involved.

In 1887, Guye, of Amsterdam, first described the condition to which he gave the name of aprosexia, or difficulty in fixing the attention, associated with nasal obstruction, the cause of which he at first attributed to obstruction of the lymphatic circulation between the brain and the nose, an opinion he later modified, as this aprosexia was found to occur in cases suffering from atrophic rhinitis where there was no obstruction apparent.

It has also been attributed to deficient aeration of the blood and the theory that it is merely a form of neurasthenia has numerous advocates. Be the cause what it may, the condition has become generally recognized and we are all, I think, familiar with the rapid improvement, both mental and physical, which so frequently follows the removal of nasal obstruction in children and adults, the symptoms often disappearing in an astonishing manner. It would not seem to require a great effort of the imagination to picture to one's self a child suffering from adenoids,—dull, unable to fix the attention, often irritable, and frequently weak physically, if unrelieved, developing into—if not already—a neurasthenic of a more or less pronounced type, especially if constitutionally predisposed.

But is such the case? It undoubtedly is in many of such instances, but the effect of mouth breathing in children is so varied, some being much less disturbed than others, that statistics do not show the percentage of neurasthenics that might reasonably be expected from what would appear to be a powerful etiological factor. Instead of becoming neurasthenic, many children suffering from untreated adenoids develop into adults of a dull mentality, weak physically, or victims of some constitutional disease.

In his investigations as to the effect of adenoids in children, Chapiro[1] found the relative number of red blood corpuscles diminished in those

with adenoids as compared with normal children, while the proportion of hæmoglobin was below normal. The number of leucocytes was markedly increased. The relative number of neutrophiles was also increased, though the number of eosinophiles did not exceed the normal. After a prolonged obliteration of the nose in young dogs he found on autopsy emphysema, at the same time there was a marked increase of erythrocytes and leucocytes. After complete plugging of the nose in full grown dogs there was a decreased frequency of the respiratory movements, though their amplitude was increased; the pressure in the trachea being also increased, as was the arterial pressure throughout, as well as that of the peripheral veins. As opposed to this the pressure in the right ventricle and main veins was diminished. Plugging of one side of the nose had no effect on the respiration or circulation. He considers all the symptoms described owe their explanation to insufficient access of air to the lungs.

L. Einis[2] published his observations on 450 cases treated by him in which adenoids were present. In nine of these there were reflex symptoms, in his opinion due to the presence of the adenoids, and invariably in those predisposed by nervous asthenia, either of the nature of hysteria or neurasthenia. He does not state how many of his 450 cases were neurasthenic or hysterical.

Royet[3] considers that there is an important category of cases of neurasthenia which are dependent on certain lesions of the naso-pharynx, and that the majority of the important symptoms of neurasthenia are rationally explained by the effect of these lesions, and is of the opinion that if a lesion of the naso-pharynx can produce reactions so important and varied as those of neurasthenia, it must have an influence on many organs of the economy.

He attributes to, and lays great stress on, the anatomical considerations of the naso-pharynx in the causation of neurasthenia in those suffering from naso-pharyngeal diseases. Among these, the fossa of Rosenmüller he regards af of great importance, not only as concerns the Eustachian tube and ear affections, but from the fact that there is an important vasculo-nervous group behind and in the immediate neighbourhood of the bottom of the fossa, consisting of the carotid and internal jugular, superior ganglion of the sympathetic, the pneumo-gastric, spinal accessory, glosso-pharyngeal and hypo-glossal nerves. Behind, and adjacent to these organs, is the latero-pharyngeal ganglion, and further distant an on this account less vulnerable, are the parotid and facial nerve.

The depth of the fossa, he remarks as being very variable, due to the

shape of the skull, arrests of development, etc. Such defects, he thinks, may not only cause a permanent stagnation of secretion but predispose to acute inflammatory attacks following exposure to humid cold, fatigue, etc. This, in his opinion, explains the frequency of production or the accentuation of neurasthenic symptoms following acute diseases of the upper respiratory tract, in la grippe in particular.

Zarniko[4] mentions among other symptoms of nasal obstruction intellectual defects, disturbances of sleep and nutrition, neurasthenia, mental and bodily fatigue, slovenliness and loss of energy, all of which as a rule promptly disappear after nasal respiration is re-established.

If in enumerating the neurasthenic conditions referable to the nose and throat I have in one or two instances included hysterical manifestations and reflex neuroses, it is because they are so closely allied to those of neurasthenia and not uncommonly treated of as such. These symptoms may be divided into three groups: *A*. Those referable to the nose and naso-pharynx, or head; *B*. Those referable to the pharynx; *C*. Those referable to the larynx.

A. Those referable to the nose and naso-pharynx or head: 1. Headaches: usually situated in the occipital or frontal region, or both, not uncommon in a truly functional condition but more so where there is associated rhino-pharyngitis or nasal obstruction.

2. Pain: or feeling of tightness across the bridge of the nose, commonly complained of.

3. Rhinorrhœa, and post-nasal secretions: Hay fever, asthma, nervous cough, etc.

4. Mental dulness or asthenia, loss of memory.

5. Epistaxis and marked congestion of turbinates, often seen in neurasthenic women at menstrual periods.

6. Neuroses of olfaction: (*a*) Parosmia, or hallucinations of smell, as a rule unpleasant; though usually due to pathological changes in the olfactory centre of the brain may occur in hysteria or neurasthenia. (*b*) Hyper-osmia, or over-sensitiveness to olfactory stimuli.

B. Neurasthenic conditions referable to the pharynx:

(*A*). Lump in the throat: This may be purely functional ("globus hystericus"), or due to anæsthetic area, the result of a central nervous lesion as progressive bulbar paralysis, or following diphtheria. This area owing to its anæsthetic character feeling to the rest of the throat as a foreign body. Feeling as if a fish bone were lodged in the throat, or as if there was a scratch or other form of irritation, with symptoms of dysphagia. With an enlarged lingual tonsil, the feeling as if a foreign body were present is usually complained of, taking the form of a prick-

ing sensation as if a splinter had lodged in the fauces. Or the patient may complain of the feeling as if a lump, hair, or other foreign body had lodged in the throat.

(*B*). Dryness or soreness of the throat: commonly complained of and may in some cases be due to mouth breathing.

C. Neurasthenic conditions referable to the larynx:

(*A*). Aphonia; (*B*). Nervous cough; (*C*). Laryngeal apoplexy—rare, neurasthenia a rather constant factor; (*D*). Bilateral abductor paralysis: Among other causes neurasthenia has been mentioned.

The treatment of those cases in which the cause is apparent is usually satisfactory and naturally consists in removing this if possible, and if necessary instituting treatment with the object of improving the patient's general condition and placing him under good hygienic and cheerful influences. Unfortunately in those in which there is no discoverable cause the outlook is much less hopeful, operative treatment with the prospect held out to the patient of relief of his symptoms being only mentioned to be condemned. But even in these much good may often be accomplished by reassuring and telling him that there is nothing seriously the matter and taking steps that the neurasthenia from which he is suffering shall have proper treatment in the hands of those best qualified to deal with the condition.

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BANANA FLOUR AND PLANTAIN MEAL AS A FOOD FOR CHILDREN SUFFERING FROM DIARRHŒA.

BY

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While travelling through the West Indies, during the Winter of 1908, I thought I would try and find some kind of an astringent food for infants suffering from diarrhœa.

Having decided to make some banana flour and plantain meal, and to give them a trial, I must say that I have not been disappointed in the results obtained. We all know how difficult it is to feed infants and children who suffer from diarrhœa. When a mother consults us about her infant who suffers from this trouble, our first question is: "Upon

what do you feed the child?" If it is a breast-fed infant, we need not have much anxiety, we stop it nursing for a few hours, give it some barley water, rice water, a dose of oil, calomel, etc., diet the mother, and, as a rule, the child is quite well in a short time.

Should the infant be fed upon milk or a patent food, etc., we tell the mother to stop it immediately; this is all very well, but what do we give in exchange, for the child's staff of life? We give barley water, rice water, albumen water, etc., in other words, we give practically plain water which will not make up for the loss. The intake is cut off or decreased to a minimum, while the output is enormously increased. As a result, the blood pressure is lowered to such an extent, that the heart muscle gives up work. At the same time the blood is concentrated and toxins do their deadly work. Now this can be prevented if we give the little sufferer sufficient nourishing food to make up for the loss. In banana flour and plantain meal, I do claim that we have a nourishing and valuable food and one that is easily digested. I do not think that it is an ideal infant food, as the starch percentage is high and the fat percentage is low. However, it will tide over a critical period and that is what we desire.

The following analysis by Dr. J. S. Donald, official analyst to the Dominion Government, will show its food values:—

Tannin		1.29 %
Carbohydrates		73..76 %
Dextrose		7.14 %
Proteids		3.06 %
Fats		.52 %
Ash	Phosphoric Acid.. 10..50 %	4.95 %
	Potash ..... 37.34 %	
Fibre		.55 %
Moisture		10.02 %

The dextrose and starch vary according to the method used in preparing the flour. It has remarkable astringent qualities, as has also the plantain meal, a nice white flour, more palatable, but more difficult to obtain and more expensive.

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THE ANNUAL EPIDEMIC OF TYPHOID FEVER.

Without the gift of prophecy, one may at the time of writing (early in July) foretell a recurrence of the epidemics that last year caused such a loss of life. One of the large general hospitals has now opened up its typhoid ward to accommodate the dozen cases that are already admitted to its beds. This is an early start, and considering that September, October and November are the months when we expect the disease to be prevalent, we are not unduly pessimistic when we say that there is great likelihood that a smart epidemic will follow so brisk a beginning. What are we going to do about it? The answer doubtless is, "Reopen the Emergency Hospital!" This measure will likely be necessary, as on account of building operations, the Montreal General Hospital will probably be unable to care for more than a very few cases. But the re-opening of the Emergency Hospital can be at the best but a palliative measure to make more bearable a terrible state of affairs. One of the great London medical journals, dealing with Montreal's typhoid fever of last winter estimated the number of cases at three thousand, and it must be admitted that the grounds upon which this calculation was based were fair ones. Looked at from any standpoint, what a reputation for a modern city to have, and worse than that, what a reputation to have deserved! What have we done to prevent the deaths from typhoid fever in the coming September and October of scores of people who are now in apparent health? We have put some chemical into the water to purify it. The present writer does not know or remember to have heard of any

efficient method of doing this successfully on a large scale, and believes that such a procedure tends to allay public anxiety without accomplishing the end for which it was instituted. We have talked a good deal about a filtration plant: without knowing for certain that this would reduce the morbidity, it is unquestionably one thing which ought to be done; it is the closing of one port of entry, and it is the duty nearest to our hand. If this be vigorously undertaken, it will yet require much time. In the meantime, the public should be warned that they are sitting in danger, and we make no apology for endeavouring to frighten people, if by frightening is meant attempting to show them how precarious is their situation. We are perfectly aware that the case is not absolutely clear against the St. Lawrence water, and proof of its guilt in the matter is probably not possible, but every analyst admits how well-founded are our suspicions of it, and when all is said and done, if not the source of our present trouble, it can become a danger at any time. Let city water be boiled; let milk inspectors do their utmost to find out the existence of cases of typhoid fever near the sources of milk supply; let plans for filtering the city water supply be prosecuted at once; let the daily papers be active in the matter of warning, as they have been before, and let everyone who is in danger (and we all are) bethink himself of it.

THE HURRY CALL.

It seems that in Toronto the question has arisen as to whether the medical man should be allowed to speed his automobile on the streets, or whether he should be bound down by the same regulations that affect his fellowman who has no greater excuse for a "hurry-run" than that he is late for the train that is to carry him to the bedside of an expiring relative. The Deputy Chief of Police makes a statement in the morning papers to the effect that no medical man should let himself be enticed into trouble through thinking that the police have orders to look with a blank stare, when he goes by at a speed that exceeds the limit. Further, he very sensibly says that it is not the place of the police but of the magistrate to discriminate between individuals who either are or act as if they were above the law. Hurry calls do exist, but they do not occur as often as the public think they do, and no one but a medical man fully appreciates how few lives actually depend upon those two minutes that are saved by reason of the speed of the motor or other conveyance.

This brings us to the one practical form that this question takes in Montreal. For years a patient public has had to put up with ambu-

lances going at break-neck pace, with gongs that ring furiously, whose very sound is an excitant to nervous prostration, and with some danger to life and limb. What is the reason for this public inconvenience? The public imagine it is to save life, and so thinking, benevolently submit to chances of being knocked down, run over or otherwise damaged; but nineteen times out of every twenty there is no question of life at stake, and too often, the hurry, the rush, the furious gong, all mean nothing worse than a crushed thumb. The writer knows very well that, exceptionally, the hurry is of use, and knows, too, of one case in which a life was probably lost only because the ambulance was stopped at the swing-bridge on Wellington Street; but he knows equally well that too often the furious driving of ambulances is an index of rivalry between house-doctors, not to say stablemen, each on account of his particular establishment, be it hospital or hostelry.

The truth is that the catch-as-catch-can method that prevails in Montreal, by which the ambulance first on the ground has the best claim on the case, is sadly out of date; without being prepared to say what is the best method that could be devised, we can at east point out how uneconomic a method is that by which six men, three vehicles and six horses can be called upon to expend time and energy, and perhaps endanger the lives of others because of, let us say, a sprained ankle. The first move that could be made might be a subdivision of the city into districts, so that all accidents in a certain district might go to a certain hospital, the districts being apportioned with reference to the hospital that is nearest. This would affect only emergency cases, for ordinary cases of illness would still be amenable to the procedure now in vogue. At any ordinary cost, the "speeding" ambulance should be checked; it is useless to urge that the ambulance "speeds" in the cause of mercy and humanity; it is but a few years since an old gentleman was killed by a speeding ambulance, and it takes a great deal of mercy and humanity to make up for a human life.

KOCH.

In medicine as in art there are many whom we may term little masters, very few great masters; many men whose names must be remembered in the history of our subject in connexion with some individual notable advance, very few who in themselves either represent, or through their work have inaugurated, an epoch. One of these few great masters was the great Prussian bacteriologist, Robert Koch. However much we may have found to criticize in his attitude towards his fellow workers, and in his ethical attitude in regard to his work, there can be no hesita-

tion in ascribing him a foremost place among the benefactors of his kind. Inevitably we make the comparison—as all have done this last score of years—with the other great master in bacteriology, his racial rival. The position he took towards Pasteur demanded the comparison. No one who has come into contact with the two men can, we would think, have any doubt as to which was the nobler personality. This, however, does not detract from the greatness of Koch's accomplishment for medicine and humanity. To him, preeminently, we owe the development of those methods which have made bacteriology a science that can be pursued, if he so wills, by any practitioner, by the keen brewer, or expert dairy-man. If Pasteur inaugurated pathogenic bacteriology and immunology, Koch it was who elevated these into practical sciences. The two together wrought a complete change in medicine and medical thought. And above all must his name remain associated with the discovery of the tubercle bacillus and the realization of the true nature of tuberculosis in all its manifold forms. It is a quibble to urge that others before him had seen the tubercle bacillus. So had others, before Lister, noted the antiseptic action of carbolic acid and corrosive sublimate. It was Lister's patient years of study that evolved antiseptic surgery and introduced a new era in surgery; it was Koch's masterpiece of research, unexampled in the annals of medical science, that revealed the bacillus, the methods of detection of the same, the mode of growth, the reproduction of the disease in the various domestic animals by inoculation of pure cultures. So complete was the demonstration that the civilized world could but wonder and accept, and comprehending slowly the full significance of the work, apply its lessons to the prevention of the disease. For Koch has made it possible that before the end of this century tuberculosis, the greatest scourge of the temperate zone, shall be as rare as leprosy now is. Compared with this his further discovery of the spirillum is as a star of the fourth magnitude, although that has already resulted in the protection against cholera and its consequent banishment from every civilized country.

These surely are accomplishments sufficient for any one mortal; nor is it for us to weigh against them his imperfect success in the further task he set himself to accomplish, namely the cure of tuberculosis by bacterio-therapy. It was the writer's good fortune to be attending a lecture by Roux at the Institut Pasteur, one afternoon in the winter of 1890-91, when the door opened and, with paretic gait, Pasteur advanced slowly into the room holding a little phial in his hand. The whole class of medical men and bacteriologists from many lands rose as he entered. "Gentlemen," said he, "you all know the news from Berlin recently

announced. I thought it would interest you to see the first specimen of tuberculine which has come to France, which M. Koch, with a courtesy that I deeply appreciate has sent to me. I need not tell you that M. Koch and I have not seen alike in all things; that makes me all the more sensible of his courtesy. Most fervently do I hope that this remedy of M. Koch will be of untold benefit to humanity." It was a graceful and memorable little scene. It is not Koch's fault that the hopes expressed by Pasteur, and felt throughout the world, have not wholly materialized. Rather, it is a tribute to his powers that although the foremost workers in many lands, following his lead, have for now close upon twenty years endeavoured to solve the problem, his tuberculin in one or other modification remains the basis of all the most promising methods of tuberculous bacterio-therapy.

We Anglo-Saxons, despite, or perhaps in consequence of Thomas Carlyle, would see our great men heroes, and prefer them to be heroes of the Sunday-school type at that. But this is muddle-headed. The old Talmudic point of view is both juster and more humane: that he who has performed a notable service to his fellowmen, whatever his frailties, is assured of heaven, because Jehovah is wise and cannot afford to lose him in Sheol. Perchance Koch was not a hero, assuredly he is an immortal.

THE ST. GEORGE TUBERCULOSIS CLASS.

The first annual report of the St. George Tuberculosis Class is in circulation this week, and we make its appearance our excuse for giving the workers concerned our hearty congratulations upon the work with which it deals. Dr. C. P. Howard is the director of the class, and his enthusiastic care is responsible for much of the good that has been done. Miss Rothwell, the visitor of the Class, has also performed excellent service. The class system, now well launched in Montreal, needs no commendation in these columns; it is, perhaps, the best adaptation to the treatment of tuberculosis among the working, but not the indigent, classes that has yet been devised, and there is no movement which marks progress more than this. The St. George Class reports twelve cases in some detail, in which the results must go far in encouraging other sufferers to undertake the same system: best of all, it permits people of the class mentioned to have a chance of understanding what can be done.

THE MEDICO-CHIRURGICAL SOCIETY.

The officers elected for the ensuing year are as follows: President, Dr. C. F. Martin; Vice-President, Dr. J. M. Elder; Treasurer, Dr. R.

P. Campbell; Secretary, Dr. Hanford McKee, with Dr. J. Alex Hutchison as Member of Council.

It is with pleasure that we refer to the work of the Society for the past year. Dr. W. Grant Stewart, the retiring president, was so efficient an office-holder, that we may here make mention of his services. No officer of the Society has ever made more personal effort for its success; everyone who has had to deal with the Society, can bear testimony to the constant and untiring efforts he made to ensure the success of every meeting, by personal communication with members, by taking care that a good paper should have worthy discussion, and by repeated attention to habitual absentees. This could only be done by the sacrifice of much time from a large and insistent practice, and it is pleasant to be able to record that his unselfish work was rewarded by a splendid year in every way. Dr. Stewart would be the last to claim his personal share in the credit of this, and we do not detract from the work of his associated officers. To them all it must be a matter of sincere pleasure that the Society responded to their work, and we take this opportunity of putting into words what every attendant upon the Society's meetings knows.

Reviews and Notices of Books.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA. THE CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. *Bulletin No. IV.* By ABRAHAM FLEXNER.. 846 pages.

The portion of this Bulletin which deals with medical education in Canada is extremely interesting. Without comment we transcribe the parts which lend themselves readily to summary treatment:

CANADA.

ALPHABETICALLY ARRANGED BY PROVINCES.

Population, 6,945,228. Number of physicians, 6,736. Ratio, 1 : 1,030. Number of medical schools, 8.

MANITOBA.

WINNIPEG: *Population*, 150,000.

(1) MANITOBA MEDICAL COLLEGE. Organized 1883. The medical department of the University of Manitoba, the connexion being in process of becoming organic.

Entrance requirement: The University Matriculation Examination or its actual equivalent. The medical course covers five years.

Attendance: 115.

Teaching staff: 41, of whom 22 are professors, 19 of other grade.

Resources available for maintenance: Fees, amounting to $14,000.

Laboratory facilities: Instruction in chemistry, bacteriology, histology, and pathology is competently given by the University of Manitoba. Other branches are carried on by the medical faculty. The equipment is adequate to routine instruction, new, and steadily increasing. There is a beautifully kept collection of several hundred wet specimens. Appearances indicate a conscientious and intelligent employment of such resources as the school has had.

Clinical facilities: The excellent Winnipeg General Hospital of 400 beds adjoins the school. The school faculty is practically the staff of the free wards. The relation between school and hospital is admirable. Students work freely in wards, clinical laboratory, operating rooms, obstetrical ward, etc.

There is a good dispensary.

Date of visit: *May, 1909.*

Nova Scotia.

HALIFAX (Nova Scotia): *Population,* 45,000 (estimated).

(2) Halifax Medical College. Organized in 1861. An independent school with a peculiar relationship to Dalhousie University, which provides satisfactory instruction in chemistry, physics, and biology, during part of the first two years of the five-year course. In respect to all else the medical school is an independent institution, though its students are practically all examined for their degree by Dalhousie University. The university thus furnishes part of the first two years' teaching and is the final examining body; with the intervening years it has nothing to do.

Entrance requirement: On a par with that of Dalhousie University.

Attendance: 63, 90 per cent. from Nova Scotia.

Teaching staff: 33, of whom 16 are professors. There are no full-time instructors. (This does not include the instructors in the scientific branches furnished by Dalhousie University.)

Resources available for maintenance: An annual appropriation of $1,200 from the provincial government and fees amounting to about $5,000. Three-fourths of the fees are distributed among the professors; one-fourth provides, with the government grant, for all other expense. A bequest yielding $200 per annum supports the college library.

Laboratory facilities: This disposition of funds is reflected in the condition of the medical college: it possesses an ordinary, ill smelling dissecting-room and a single utterly wretched laboratory for pathology, bacteriology, and histology. A microscope is provided for each student. Though this same "laboratory" serves for the provincial board of health, no animals are used. There is no museum worthy the name,

and no laboratory work in physiology or pharmacology. The laboratory sciences have been starved that small dividends might be paid to generally prosperous practitioners.

Clinical facilities: Clinical instruction is provided at the Victoria General Hospital,—a government institution of some 200 beds, open to the medical school. About 70 per cent. of the cases are surgical. The staff appointments are made by the government for its own reasons; the medical college is forced to confer professorships on these appointees. Ward classes are conducted; individual cases are assigned, and the student's notes become part of the hospital records. Instruction in clinical microscopy is very limited.

Obstetrical opportunities barely suffice. Autopsies are performed in the presence of students, who report on them. The college has no dispensary, but students are required to attend the city dispensary,—an institution within which the medical school has no authority. The attendance is fair.

It has been stated above that except during part of the first two years Dalhousie University has no teaching responsibility for or connexion with Halifax Medical College. On the other hand, students of Halifax Medical College are examined by the medical faculty of Dalhousie University and obtain the Dalhousie degree in medicine, won by students whose opportunities have been provided by Halifax Medical College? The connexion is, from the standpoint of Dalhousie University, highly objectionable.

Date of visit: *October, 1909.*

Ontario.

KINGSTON: *Population,* 20,000.

(3) Medical Department of Queen's University. Organized 1854. The relation of the medical department to the university is anomalous, marking a period of transition that is likely soon to result in complete integration.

Entrance requirement: Heretofore somewhat below that of the arts department of the university, though students must comply with the requirements of the province in which they expect to practise. The medical course covers five years.

Attendance: 208, 71 per cent. from Ontario.

Teaching staff: 38, 16 being professors.

Resources available for maintenance: Income in fees, $19,978. A fixed percentage of fees is annually expended on buildings, equipment, and maintenance. The remainder belongs to and is disbursed by the medical faculty.

Laboratory facilities: The laboratory building is new and the equipment is adequate to intelligent routine work. At present, physics, chemistry, and physiology are taught in the university, in return for which the university receives a part of the fees of the students instructed. Full-time professors in anatomy and pathology are provided by the medical school. A museum is in process of formation. There is a small collection of books and periodicals in the faculty room, open to students.

Clinical facilities: The clinical facilities are limited. The school relies mainly on the adjoining Kingston General Hospital, in which its faculty practically constitutes the staff. The average number of beds available is 80, but they are well used. In addition to ward work, students are required to work up individual cases in correct form, including the clinical laboratory aspects. There is a ward for infectious diseases. Obstetrical cases are too few. Post-mortems are secured mainly at the Rockwood Insane Asylum. Two supplementary hospitals provide additional illustrative clinical material. The opportunities for out-patient work are slight.

Date of visit: *October, 1909.*

LONDON: *Population,* 41,500.

(4) Western University Medical Department. Established 1881. Practically an independent school.

Entrance requirement: Nominal. The student, for his own protection, is expected to fulfil the requirements of the place in which he intends to practise. The medical course covers four years.

Attendance: 104.

Teaching staff: 20, of whom 8 are professors, 12 of other grade.

Resources available for maintenance: Fees, amounting to $11,590 (estimated).

Laboratory facilities: These consist of a single room called the laboratory of pathology, bacteriology, and histology, whose equipment consists of microscopes and some unlabelled specimens,—no microtome, cut sections, incubator, or sterilizer being visible,—a wretched chemical laboratory, and an ordinary dissecting-room. There is no outfit for physiology, pharmacology, or clinical microscopy, and no museum deserving the name. There are a few hundred books, locked in cases to which the janitor carries the key.

Clinical facilities: These are entirely inadequate. They are confined almost wholly to a small number of beds in the municipal hospital.

The school has no dispensary.

Date of visit: *October, 1909.*

TORONTO.

(5) University of Toronto Faculty of Medicine. Established 1887. An organic department of the university.

Entrance requirement: The Junior Matriculation Examination, strictly enforced. The course covers five years.

Attendance: 592.

Teaching staff: 68, of whom 27 are professors, 41 of other grade. Ten professors with fifteen assistants give their entire time to teaching and research.

Resources for maintenance: The department is supported out of the general funds of the university, its cost being considerably in excess of fees received. The latter amount to $64,500.

Laboratory facilities: The laboratories are in point of construction and equipment among the best on the continent. Increasing attention has been devoted to the cultivation of research. There are both general and departmental libraries, an excellent museum, and all necessary teaching accessories.

Clinical facilities: The school has recently perfected a very intimate relationship with the new Toronto General Hospital, by which its faculty obtains complete control of the clinical advantages of some 500 beds. Students have the access to all wards, clinical laboratory, dispensary, etc. Other large local hospitals—general and special—are also available.

Date of visit: *March, 1909.*

Quebec.

MONTREAL.

(6) McGill University Medical Faculty. Established 1824. An organic department of the university.

Entrance requirement: The University School Leaving Examination, strictly enforced. The medical course covers five years.

Attendance: 328.

Teaching staff: 99, of whom 19 are professors, 80 of other grade. Ten instructors devote their entire time to teaching.

Resources available for maintenance: The department has separate endowments aggregating $350,000 and is assisted out of the general university funds. Its fees amount to $43,750; its budget $78,000.

Laboratory facilities: The laboratories having been recently injured by fire, the school is now waiting the completion of its new buildings, for which ample funds have been secured. Meanwhile its temporary quarters, well equipped for both teaching and research in all depart-

ments, show what energy and intelligence can accomplish in the face of disaster. The anatomical and pathological museums are among the most famous on the continent. The school possesses an excellent library and all necessary teaching accessories.

Clinical facilities: These are excellent. The school enjoys a most favourable relation to two large hospitals, of about 500 beds, besides several other institutions. Students work freely in all the wards and clinical laboratory.

The dispensary service is large and admirable.

Date of visit: *March, 1909.*

(7) Laval University Medical Department. Organized 1878. The university connexion is not intimate.

Entrance requirement: Indefinite, depending on the prospective location of the student. The medical course covers five years.

Attendance: 217.

Teaching staff: 8.

Resources available for maintenance: Fees, most of which are distributed among the teachers.

Laboratory facilities: Chemistry is given by the university. Anatomy is limited to dissecting. A single laboratory with meagre equipment is assigned to pathology, bacteriology, and histology. There is a library and a small collection of specimens, not all labelled.

Clinical facilities: The school has access to two hospitals, containing together 250 beds. The dispensary has a fair attendance.

Date of visit: *March, 1909.*

QUEBEC: *Population,* 70,000.

(8) Laval University Medical Department. Organized 1848. An organic part of Laval University.

Entrance requirement: Indefinite, depending on the student's prospective location. As most graduates locate in the province—French being the language of instruction—they must comply with the provincial requirement. The medical course covers five years.

Attendance: 92.

Teaching staff: 22.

Resources available for maintenance: Fees and an appropriation by the university.

Laboratory facilities: Instruction in chemistry and physics is provided by the university; in the medical building, recent, though not extensive, laboratory provision is made for anatomy, histology, bacteriology, and pathology. There is no experimental physiology or phar-

macology. A library for students and a museum have been started lately. The buildings are admirably kept.

Clinical facilities: Clinical instruction in medicine, surgery, and pediatrics is given at the Charity Hospital (Hotel Dieu), to the free wards of which the faculty serves as staff. The amount of material is limited in quantity; the staff rotates monthly. The hospital contains a clinical laboratory, in which instruction is given in connexion with ward work. The fifth year, now required, and a proposed reorganization of staff and teaching arrangements promise to improve the instruction. Obstetrical opportunity is abundant.

The dispensary has a sufficient attendance.

Date of visit: *October, 1909.*

General Considerations.

In the matter of medical schools, Canada reproduces the United States on a greatly reduced scale. Western University (London) is as bad as anything to be found on this side the line; Laval and Halifax Medical College are feeble; Winnipeg and Kingston represent a distinct effort toward higher ideals. McGill and Toronto are excellent. The eight schools of the Dominion thus belong to three different types, the best adding a fifth year to their advantages of superior equipment and instruction.

At this moment the needs of the Dominion could be met by the four better English schools and the Laval department at Quebec. Toronto has practically reached the limits of efficiency in point of size; McGill and Manitoba are capable of considerable expansion. The future of Kingston is at least doubtful. If could certainly maintain a two-year school; for the Kingston General Hospital would afford pathological and clinical material amply sufficient up to that point. But the clinical years require much more than the town now supplies. Its location—half way between Montreal and Toronto, on an inconvenient branch-line—greatly aggravates the difficulties due to the smallness of the community. The rapid development of the North-west Territory will undoubtedly hasten the growth of the Winnipeg school; other institutions will in time be established nearer the Pacific coast as the country grows in population.

The legal standard in the Dominion has not thus far been high; but it has practically been elevated a year by the general movement to prolong the course to five years. Meanwhile, the high quality of instruction offered by McGill and Toronto to students who enter on less than a four-year high school education proves that our trouble in the United States

has been at bottom not less one of low ideals than of low standards. Indeed, where ideals are low, there are no standards; and where ideals are high, standard, even though low, is at any rate so definite that it furnishes a sure starting-point towards a clearly apprehended goal. The low standard school in the United States has had no such starting-point and no such goal.

Duodenal Ulcer. By B. G. A. Moynihan, Leeds. Illustrated. W. B. Saunders & Co., Philadelphia and London.

In this monograph of 400 pages, Moynihan has given a very complete account of a subject which is of great interest to both the surgeon the general practitioner. After a short, introductory, historical chapter, the author refers to duodenal ulcer as a complication of extensive burns of the skin—Curling's ulcer. He points out that the credit of drawing attention to this rather rare condition properly belongs to James Long, of Liverpool who reported such cases in 1840, before either Curling or Dupuytren reported their cases.

Uræmic ulcer of the duodenum (Freitz ulcer) is next dealt with. These ulcers, which sometimes complicate fatal cases of Bright's disease, are not so common in the stomach or duodenum as they are lower down the intestinal tube; nevertheless, the author is able to cite notes of 27 such cases. They are usually of a hæmorrhagic character, and possibly analagous to the sub-cutaneous hæmorrhages occurring in these cases with marked dyscrasia.

Tuberculous ulcer comes next, and the difficulty of exactly placing the etiological factor in these cases is frankly admitted. They, too, are much more rare here than they are further down the bowel. The author has operated upon two undoubted cases, and examples of 34 other cases are recorded, most of them found post mortem.

Duodenal ulcer, associated with melæna neonatorum is next discussed, and the relationship between these two conditions is marked out, and illustrative cases are cited.

A word here may be said about the excerpts from the case reports which are scattered through the volume to emphasize the points made by the author. They are models of what such things should be: neither so full as to be tiresome nor so meagre as to be useless.

The very important question of the chronic duodenal ulcer, and the differential diagnosis between it and other abdominal conditions of an inflammatory character, is next fully dealt with, and the clearness with which the subject is presented is worthy the world-wide reputation of the author.

"Hæmorrhage," he reminds us, "is not a symptom, but a late complication. Its onset is not to be awaited to confirm a doubtful diagnosis, but its appearance should be prevented by a timely recognition of the significance of the early symptoms * * * Hæmorrhage from a duodenal ulcer is of far more serious import than bleeding from a gastric ulcer. In the latter, death very rarely occurs; in the former, it is more frequent than is generally supposed."

As regards treatment, the author insists that this is purely surgical, once a diagnosis is made. In the great majority of cases, gastro-enterostomy gives the best results, but the ulcer should either be incised, if small, or infolded, if large. This latter procedure is insisted upon, inasmuch as it prevents recurrence, and at the same time produces duodenal stenosis, which is an essential factor in preserving the patency of the gastro-enterostomy. The very excellent plates, which illustrate this part of the text, enable one to follow perfectly the different steps of the operative procedures recommended.

One notices that the author here rather discourages the use of the "stitch on the mucosa," which he so highly eulogizes in his article on the surgery of the stomach in Burghard's System of Operative Surgery, (Vol. II, p. 337.)

Perforation of the ulcer is next dealt with in a perfectly written chapter—perhaps the most interesting in the whole book, to the practical surgeon. The danger of mistaking this condition for thoracic inflammations, and *vice versa*, is very properly dwelt upon.

The pathology of the chronic duodenal ulcer is fully and carefully gone into, and the last 110 pages (exclusive of a good index) consists of an appendix "containing a detailed statement of all cases (186) operated upon to the end of 1908, with an analysis and summary." For this we are indebted to Mr. Moynihan's colleague at the Leed's Infirmary, Mr. H. Collinson. This appendix is a most valuable part of the book, as it puts at the disposal of the reader, in a concise form, examples of almost every conceivable variety of this disease.

The letter-press, illustrations, and general appearance of the book are quite in keeping with what one now expects from the publishers, and altogether one most heartily recommends the work to every medical practitioner.

J. M. E.

Insanity in Every-day Practice. By E. G. Younger, M.D., M.R.C.P. Second edition. Baillière, Tindall and Cox, London, 1910.

The Medical Epitome Series:. Diseases of the Skin. By Alfred Schalck, M.D. Second edition. Lea and Febiger, Philadelphia.

Prescription Writing and Formulary. By John M. Swan, M.D. Containing 1,043 prescriptions. The W. B. Saunders Company, Philadelphia and London. Canadian agents, the J. F. Hartz Co., Toronto, 1910.

Light Therapeutics. By J. H. Kellog, M.D. The Good Health Publishing Company, Battle Creek, Mich.

The Influence of Strong, Prevalent, Rain-bearing Winds on the Prevalence of Phthisis. By William Gordon, M.A., M.D., F.R.C.P. With maps. H. G. Lewis, London, 1910.

Index of Symptoms. By R. W. Leftwich, M.D. Fourth edition. William Wood and Company, New York, 1910.

Progressive Medicine. A Masterly Digest. Edited by Hobart Amory Hare, M.D., assisted by Leighton F. Appleman, M.D., June 1st. 1910. Lea and Febiger, Philadelphia and New York. Six dollars per annum.

The contents of No. 2 Vol. XII, or Whole Number 46, that is the June issue, of Progressive Medicine, are as follows: Hernia, by William B. Coley; Surgery of the abdomen, by Edward Milton Foote; Gynæcology, by John G. Clark; Diseases of the blood, etc., by Alfred Stengel, and Ophthalmology, by Edward Jackson. The volume with index contains 363 pages. We mention this publication from year to year with increasing praise.

A Text Book on the Practice of Gynæcology for Practitioners and Students. By William Easterly Ashton, M.D., LL.D., Fellow of the American Gynæcological Society; Professor of Gynæcology in the Medico-Chirurgical College, and Gynæcologist to the Medico-Chirurgical College of Philadelphia, etc., etc., with ten hundred and fifty-eight new line drawings illustrating the text. Fourth Edition, revised and enlarged.

When a book has reached a fourth edition in a little over four years, there is no need to say anything about its popularity, or that it has merits which commend it to an exceptionally large number of students, and here we do not limit the word student to the undergraduate.

The call for a fourth edition in one year from the date of issue of the third did not, however, satisfy the author that his book was perfect or up to date. A considerable amount of revision has been done and new matter added. The subjects thus treated anew are, constipation, indoor exercises in relation to abdominal and pelvic displacements, the treat-

ment of erysipelas of the vulva, the operative management of pelvic suppuration, operation in ectopic gestation, the treatment of cystitis, tuberculosis of the genital organs, abdominal and pelvic operations, peritonitis and its operative treatment, and movable kidney and its treatment.

In the treatment of erysipelas of the vulva, the author approves of the local fomentation of the parts with a saturated solution of magnesium sulphate as recommended by Dr. Henry Tucker, of the Philadelphia General Hospital. In the operative treatment of pelvic suppuration, the author is in accord with most operators in contending for a more extended employment of vaginal section, while in the cataclysmic type of ectopic gestation he declares himself in favour of immediate operation with simultaneous intra-venous injection of normal salt solution. Our readers will remember that the question of immediate or deferred operation has been much discussed in recent times.

Dr. Ashton gives adhesion to those who favour the earlier getting up of patients after abdominal section. The selection of patients for this detail of after-treatment will, however, always be important. The neurasthenic woman and the woman drained and blanched by profuse hæmorrhages had better be kept rather long in bed.

Readers of the previous editions of Dr. Ashton's book will remember that one of its most notable features is the minute description of every operation, big and small, in gynæcology, with illustrations of all the instruments and appliances needed for the doing of them.

Emergencies of General Practice. By Sargent & Russell (Percy Sargent, M.B., B.C., F.R.C.S., Surgeon to Out-Patients St. Thomas' Hospital; surgeon to the National Hospital for the Paralyzed and Epileptic, Queen Square; and Alfred E. Russell, M.D., B.S., F.R.C.P., Physician to Out-Patients St. Thomas' Hospital) London: Oxford Medical Publications; Toronto: D. T. McAinsh & Co. 364 pages, illustrated, price $4.50.

This is a thoroughly adequate book, carrying out the design of the authors, which is to provide a ready means of assistance to the practitioner—it does not aim to give all the methods that can be used to meet each emergency, but to provide at least one good method which their own experience has taught them may be efficient. It aims, too, to indicate those cases in which the relief of the patient takes precedence of a painstaking diagnosis. It is everywhere brief, nowhere verbose, and throughout sensible; one can imagine its assistance in a given case proving its worth abundantly to the practitioner. The last chapter, which can be instantly referred to by reason of its position in the book, deals

with poisons and antidotes. From the standpoint of practitioners on this continent, we think the paragraph on appendicitis should constitute as emergency conditions, not only the occurrence of peritonitis and local abscess, but the existence of the disease itself with a view to its earliest recognition preventing the occurrence of either of these serious complications. The attitude of the authors upon the question of immediate operation in appendicitis is indicated on page 225, as applying only to these conditions. In all good faith we may say that any attempt to suggest that some cases of acute appendicitis do not from the onset demand operation will not assist the contention, and will constitute a criticism against the book in the minds of many practitioners on this continent. Another point which is of especial interest to American practitioners arises in connexion with typhoid fever. It would be well, we think, to insert a sentence upon the extreme importance of sudden abdominal pain in typhoid fever, because it is not so necessary to instruct the physician whose suspicion of perforation is aroused, as to caution him whose suspicions are not aroused sufficiently easily.

Transactions of the American Urological Association. Vol. III, 1909.

Nothing could better illustrate the surprising progress which genito-urinary surgery has made on this continent than the report of the last, or more properly, the eighth meeting of this Association. The present volume shows a distinct advance on its two predecessors, not only in the number of its pages, but in the interest and general style of its thirty-six papers. What we recently said of the former reports applies equally here. Among the most important subjects discussed we find:—The usefulness of operations on the seminal canal—operations carried out either on account of persistent infection (Fuller, Belfield) or of sterility (Martin, Quinby): the importance of the prostrate as a lurking place for the gonococcus (Sachs, Wolburst): various new instruments in genito-urinary surgery among which we note Gomig's new urethroscope and median bar excisor, also his operating cystoscope: treatment of gonorrhœa by means of vaccines (Swinburn, Hartwell): conditions causing dilatation of the renal pelvis and the means of diagnosing the same (Brunerman, Braasch, Keys): the functional activity of the kidney. (Schapira.)

From the practical standpoint American urology has long been able to hold up its head; it is from the pathological, bacteriological, and chemical—in short, the scientific point of view that we have lagged behind. It is, therefore, the more gratifying to mark the general improvement in this respect which occurs in all types of papers. If

so much has been accomplished in the few short years since the Association began, we can confidently look forward to the greater possibilities of the future.

R. P. C.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Professor of the First Medical Clinic, Vienna. Part VIII. Inanition and Fattening Cures. Authorized American Edition. Edited and translated under the supervision of Alfred C. Croftan, M.D., Chicago, Ill. New York: E. B. Treat & Company, 1910. Price $1.50.

The lectures given in this book were delivered, in 1908, to a post-graduate class of Vienna physicians. The first half of the book is devoted to the consideration of inanition and undernutrition; the problem of loss of weight is studied and much interesting material put forward regarding the way in which the different sorts of tissue take their respective parts in bearing the burden of innutrition. The basis of all the calculations is the calorie, and the work is made as practical as possible by the addition of a chapter (viii) upon the calculation of the caloric value of foods, and a table containing the calculated calories in many different common articles of food. The problem of undernutrition, and also of fattening, to be met scientifically, must be based upon the "maintenance-diet" for such individual. A point upon which Prof. von Noorden insists is that a fattening cure when undertaken should aim at the education of the patient to persist in the diet that has been found useful, especially in the matter of the ingestion of fats; and that the cure of neurasthenia and tuberculosis may be attained not by overfeeding so much as by overfeeding with the addition of judicious activity.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Professor of the First Medical Clinic, Vienna. Part IX. Technique of Reduction Cures and Gout. Authorized American Edition. Edited and transcribed under the supervision of Alfred C. Croftan, M.D., Chicago, Ill. New York: E. B. Treat & Company, 1910 Price $1.50.

The first half of this volume deals in a practical, if somewhat elaborate manner with the methods in vogue for the reduction of obesity. The author insists upon the recognition of causation in obesity, whether it arises from overeating, from inactivity, or whether there be perversion of internal secretion in the case, for example, of the thyroid gland.

A most practical point dealt with by the writer, is that the reduction cure itself is not so important as the education in the necessary modifications in the patient's habits. The less "original" the method the better, that is, the ultimate success will be greatest if the patient can go on subsequently with a diet not vastly different from that which his mode of life ordinarily suggests. The importance of knowing the exact maintenance-diet is once more insisted upon as the necessary starting point.

The second half, dealing with gout and nephrolithiasis urica, deals with its subject in a painstaking way. Here the great necessity is that the physician shall know the purin-percentage of the food administered; the measuring-glass and the scales must be the first requirements. Even for the physician who has not made use of these, there is much clear exposition and good information. The book is uniform in its make-up with the previous eight volumes.

PRACTICAL DIETETICS. By W. GILMAN THOMPSON, M.D., Professor of Medicine in the Cornell University Medical College in New York City, and Visiting Physician to the Presbyterian and Bellevue Hospitals. 4th Edition, illustrated, enlarged and completely rewritten, 928 pages, price $6.00. New York: Appleton & Co.

Dr. Gilman Thompson's book upon practical dietetics has gone through three editions since it was first published in 1895, and this, the fourth edition, is carefully revised with a view to increasing its admitted excellence. It is a compact volume of 900 or more pages, an increase of 75 pages over the last edition, and it contains an immense amount of material which is readily available because so well indexed.

The author's standpoint is a very excellent one for the man who undertakes such a task: "I distinctly disclaim the advocacy of any special dietetic system as a cure-all, as well as the specific influence of any one food in the general treatment of disease." This is a sensible basis on which to build the superstructure of a work on dietetics.

Without in any way attempting to even outline the scope of the book, it may be said that the entire subject is here, in a form very useful to the practitioner. the foods, beverages, their preparation, their cooking, and the special forms applicable to specific diseases, are dealt with in all necessary fulness, and with a strong underlying stratum of common sense. Questions that are debatable are sure to find conservative, but not indecisive answers, and this, we think, is the kind of recommendation that appeals to physicians in general. We congratulate Dr. Gilman Thompson on having brought his work to so good a fulfilment, and cheerfully recommend the fourth edition of "Practical Dietetics."

Congenital Dislocation of the Hip. By J. Jackson Clark, F.R.C.S. London. Baillière, Tindall & Cox, 1910; pp. 92.

This is a good description of the Lorenz method of reduction of the dislocation with the addition of some practical points in the after treatment by the author. He adds a series of 40 cases with results. We would have expected him to mention the Hoffa method of reduction; and it is agreed now that myorrhexis at the time of reduction is only occasionally essential.

Les Appareils Platrés. Par Docteur Jean Privat. Paris, A. Maloine; Toulouse, Edouard Privat, 1910; pp 296

This book consists of an illustrated and exhaustive description of the uses of the plaster of Paris bandage. The plates are very clear and descriptive and give ingeni us and valuable suggestions by the writer who has had much experience in its uses. There is no mention made of the use of "scratchers" under corset or spica. Caution must be used in following his advice of correcting deformity by means of pressure through windows in the plaster cast.

W G. T.

The Optic Nerve and the Accessory Sinuses of the Nose: a Contribution to the Study of Canalicular Neuritis and Atrophy of the Optic Nerve of Nasal Origin. By Professor A. Onodi, of the University of Budapest, Member of the Hungarian Academy of Sciences; authorized translation by J. Lückhoff, M.D., Edin., Ch. B., of Cape Town. 101 pages. Fifty illustrations. London: Baillière, Tindall & Cox.

Rhinology owes much to Professor Onodi for his anatomical studies of the accessory sinuses of the nose. His atlas is well known, and is a standard work.

In 1906 he published his book on the relations between the optic nerve and the accessory sinuses. But not until the present year has it appeared in an authorized English translation. As explained in the short introduction, the English text is really more than a translation of the German, since it contains matter not found in the latter; moreover the number of illustrations is nearly twice as large.

The present monograph falls into two parts, topographical anatomy and clinical considerations.

In the first part, the author presents the results of his exhaustive study of preparations of the nose and sinuses, in so far as it concerns the sphenoid sinuses and posterior ethmoid cells. He finds wide variations in the relation of the two optic nerves to these cavities; in fact, he enumerates

thirty-eight varieties, dividing these into twelve main groups. He describes each of the thirty-eight with elaborate detail, and provides a generous number of illustrations.

These are reproductions of photographs, and show the parts in their natural size. In most of the dissections the soft parts have been retained to show the optic nerve or nerves and the mucous membranes *in situ*. To only one typographical error do we call attention, viz., Fig. 10. on page 13: here the numbers 2, 5, 6 and 7 are made to point to structures other than those assigned to them below. The illustrations themselves are far better than we are accustomed to see, when we consider them not as diagrams but as photographs.

The author leaves himself open to criticism by his frequent references to his own atlas. We do not forget our tribute to its authority, but cannot see his right to assume that his readers are all fortunate enough to be possessors of it or to have ready access to it.

The second part of the books treats of clinical considerations, and the author gives resumés of his own cases and of those reported by others. Complications of accessory sinus disease are many: and with those affecting the optic nerve are included also those of the orbit in general, and of neighbouring parts including meninges and brain. For our better understanding of the same, the author follows with an account of the anastomoses between the veins of the nose, of the accessory sinuses, of the orbit, and the large venous sinuses.

We can select for special mention a few of the author's more striking conclusions; that the majority of visual disturbances caused by accessory sinus disease have been unilateral; that the optic nerve may be in closer relation to the posterior ethmoid cells than to the sphenoid sinus, so that ethmoiditis as well as sphenoiditis may be a source of visual disturbance; that the sphenoid sinus or posterior ethmoid cell of one side may be in close relation to the optic nerve of the other side, and that, consequently, unilateral disturbance of vision may be due to trouble in the accessory sinuses of the same or the opposite side.

The author cites a comforting list of cases where visual disturbances have been improved or cured by treatment of affected sinus, cases of muscular pareses, retrobulbar neuritis, choked disc, central scotoma and other conditions.

The author is to be congratulated upon this result of his many years of investigation. He is fortunate also in having so good a translator.

The work will appeal to more than rhinologists, dealing as it does with matters of profound importance to the clinician, the ophthalmologist, the neurologist and the brain surgeon.

H. S. M.

Medical News.

THE MONTREAL GENERAL HOSPITAL DENTAL CLINIC.

The report of the dental clinic shows that there have been, between January 26th and June 30th, 1910, 705 new patients; 63 anæsthetics have been administered, and 919 extractions performed. Details of other work are as follows:—Treatments 23; prophylaxis 19; fillings, amalgam, 139; cement, 22; gold 41. porcelain 1; crowns, gold 7; porcelain 12; Richmond 7; bridges 9; dentures, full, 45; partial 19; treatment of compound fracture of maxilla 1.

PEDIATRICS IN MEDICAL COLLEGES.

The importance of pediatrics as a study in our medical schools, and recognition of the surgical diseases of children as a department of study, was among the admirable features of the report on curriculum presented at the meeting of the Association of American Medical Colleges held in Baltimore in March. The report placed the minimum number of hours to be devoted to pediatrics at 150, which is an increase of 50 per cent. over the present requirement of the Association, and yet is a very modest share of the 4,000 hours of the clinical years (the third and fourth years) of the college course. Dr. H. D. Arnold, of Boston, was chairman of the sub-committee on curriculum for the clinical years, and Dr. S. W. Kelley, of Cleveland, member representing pediatrics. The report goes on to say: "The allowance for pediatrics is intended to include instruction in the exanthemata. In many other ways medicine and pediatrics overlap. Useless repetition can only be avoided by a proper understanding between the teachers of these two subjects, and a certain elasticity should be allowed a school for the purpose of assigning time to one subject or to the other according to where the borderland subjects can best be taught. In the same way pediatrics and surgery touch and overlap. In one subject or the other the surgery peculiar to children should receive attention."

AMERICAN PUBLIC HEALTH ASSOCIATION TO MEET IN MILWAUKEE.

The American Public Health Association will hold its 38th annual meeting in Milwaukee, Wisconsin, Setepmber 5th to 9th next. Representatives from many of the national organizations working in the interest of the public health have been invited to be present and to discuss methods for the correlation of the work of such organizations, and

for co-operation with a view to increasing efficiency and economy. Sanitary engineering will occupy a conspicuous place on the programme.

This Association is the oldest national sanitary organization in the United States. Its membership extends over the United States, the Dominion of Canada, Mexico, and Cuba. Information concerning it can be obtained by addressing Dr. Wm. C. Woodward, Secretary, Washington, D.C.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

ANDREW MACPHAIL. "Medicine in Canada." *Brit. Med. Jour.*, May 7, 1910.

The demand for reciprocity in medical degrees between Canada and the other parts of the Empire has not arisen out of a dearth of qualified practitioners in Canada. There are in the various provinces seven medical schools—namely, those in connexion with the University of Toronto, McGill and Laval at Montreal, Queen's at Kingston, Dalhousie at Halifax, the Western University at London, and the University of Manitoba in Winnipeg.

At the close of the session of 1909 there were in attendance at these seven schools 1,821 students, and 321 physicians graduated from them. There were in Toronto 674 students and 91 graduates; in McGill, 332 students and 72 graduates; in Queen's, 257 students and 40 graduates; in Laval, 214 students and 43 graduates; in the Western, 104 students and 25 graduates; in Dalhousie, 121 students and 8 graduates; and in Manitoba, 119 students and 33 graduates. Four of these schools—Toronto, McGill, Manitoba, and Laval—require a course of study extending over a period of five years before a candidate can proceed to a degree; Queen's gives a fifth year which is optional, and none demands less than four years.

Upon the quality of the instruction which may be obtained in Canada, there is also some evidence. The Trustees of the Carnegie Foundation for the Advancement of Teaching and a Committee of the American Medical Association, as the result of a personal investigation conducted in 1909, reported that at least two Canadian schools were entitled to rank in the first class—that is, with Harvard and Johns Hopkins in the United States. These are the schools of McGill and Toronto.

From this it will appear that the fullest measure of reciprocity would do nothing more than admit practitioners to a field which is already well

occupied, in which the native must have a certain advantage on account of local knowledge and intimate association. There are many towns, however, especially in the West, which have sprung into existence within the past few years, others which have doubled in population within the past ten years, and all will more than double in the next five if the present rate of increase is maintained. These are the places in which a well-trained man—that is, one who is competent to diagnose and treat all diseases, and is qualified to perform all ordinary operations in every department of surgery—may surely hope to succeed.

Up to the present moment the attempt to obtain a full measure of reciprocity between Canada and England, or even between the nine provinces themselves, has failed, although it has been persisted in for the last ten years. This is due to the fact that under the British North America Act of 1867, which governs the Confederation of Canada, all matters pertaining to education—elementary, scholastic, and professional—lie within the authority of the various provinces; and Quebec, which is French and Catholic and in possession of a system of education peculiarly adapted to those conditions, has guarded this right with jealous care.

To all requests for reciprocity the General Medical Council of Great Britain made the obvious reply that the provinces of Canada should first agree among themselves in establishing one standard of entrance to the study of medicine and one standard of final qualification. To this Quebec would not agree. That would be to surrender the inalienable right to the control of education.

To meet this difficulty, the Medical Acts Order of 1906 was passed by the Privy Council, under which each province of Canada was constituted a separate State for the purposes of negotiation. Nova Scotia and Prince Edward Island immediately applied. They granted and received a measure of reciprocity under which their qualifications were registrable in Great Britain, and, therefore, in each other; and practitioners registered in England were free to practise in those provinces. Quebec also applied for and offered reciprocity. This was mutually agreed to after provision had been made for adequate preliminary education, and to prevent a graduate who had for cause been refused the Quebec licence from registering in England, and so evading the local regulations. Only three persons from Quebec and about a dozen from Nova Scotia have availed themselves of the privilege; but I cannot find that any licensees from England have signified a desire to be enrolled upon the registers of these provinces.

The attempt to secure one register for all Canada has not been abandoned, as it is felt to be an anomaly that each province should have its

own system, and that well-qualified men should not be free to move from place to place as they desire. In 1902 the Canada Medical Act was introduced in the Dominion Parliament by Dr. T. G. Roddick, Dean of the Medical Faculty of McGill University and member for the St. Antoine Division of Montreal. It aimed at a "one-portal" system for entrance to the medical profession in Canada, but failed to pass on account of the opposition of Quebec.

During the present session an amendment was sought to the effect that, when five or more provinces agreed upon terms of the Act, a plan of registration for those provinces could be established. Quebec objected on the ground that she was being coerced by a threat of isolation; but eventually Quebec was satisfied, mainly by the provisions that the matter of preliminary education shall be left in the hands of the provinces, and that the Dominion Council shall relegate to assessors the supervision of the primary examinations, as they are now held in the various universities. In the original Act it was provided that a properly qualified person who had been engaged for six years in the practice of medicine in any one of the provinces should be entitled to registration without examination. The amendment extends this period to ten years, and allows to the Medical Council of any province the privilege of exacting an examination in final subjects, if it sees fit. The scheme of representation on the Dominion Medical Council, originally based on census returns, will now give two representatives to each of the provinces, and, on account of their greater size, one additional to Ontario and Quebec. The universities, as originally proposed, shall each have one representative, and the Governor-General-in-Council shall appoint three members, each of whom shall reside in a different province. In addition there shall be three members elected by such practitioners in Canada as by the laws of the province wherein they practise are now recognized as forming a particular and distinct school of the practice of medicine, and as such are by the same laws entitled to practise in the province. This clause apparently is intended to meet the views of persons who are known as homoeopaths.

Everything was in readiness for the passing of these amendments, which would have consolidated the profession in Canada, when the Council of British Columbia demanded delay, and protested that it was unwilling to proceed before the proposals had been submitted to the entire body of the profession in that province. As the time for presenting bills had already nearly expired, there was no alternative but to postpone the introduction of the amended Act until another year.

This action of British Columbia is not hard to understand. For years the West was the strongest advocate of a single Canadian register, in

opposition to Quebec and, in a less degree, to Ontario. But now the West is becoming the predominant partner, and is disposed to scrutinize closely any arrangement under which the number of practitioners west of Lake Superior will be increased, whether they come from Eastern Canada or from across the seas.

For ten years Dr. Roddick has been indefatigable in the labour of reconciling local interests, and he has not yet abandoned the task. The matter will be brought before representatives of all the Provincial Councils at the meeting of the Canadian Medical Association in Toronto on June 1st, and if the objections of British Columbia can be removed his great work may then be said to be accomplished.

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"THE NEUROTIC": A CHARACTER STUDY IN MEDICINE.

BY

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A famous French philosopher is said to have once made the remark that of all mortals the Doctor and the Priest knew man least; that is, in his entirety, for the former only studied the body, and the latter merely the soul. In saying this, he may have had in mind Pope's words in his essay on man—that "all are but parts of one stupendous whole, whose body nature is, and God the soul;" and though at times "philosophy will clip an angel's wings," this French writer has expressed, in an exaggerated way, the tendency in medicine to-day to look upon those seeking its relief as illustrating so many clinical signs or so much anatomic pathology—a beautiful specimen, if you will—and to overlook that which disappears before the post-mortem table is reached, and which can never be studied as microscopical sections—the character of the individual.

Let us, as coming medical men, study our patients as individuals and not as mere cases. No doubt hospital practice, from its very nature and taken in conjunction with the onward march of pathology, render us prone to fall into this frame of mind. But it must be remembered that out in the world we will have to face intelligent individuals, not only as doctor to patient, but as man to man. Therefore would I plead for a little more study of character in medicine, and it is bound to prove an intensely interesting one, for has not Emmerson said that "character is nature in the highest form," and just as daylight can be seen through very small holes, so little things will illustrate a person's character.

But, fortunately for our higher development as physicians, there are certain affections of mankind for which our powers of advice, diagnosis and treatment are called into requisition which do not appear to have any definite pathological basis, in which we cannot peer into our patient's body, as it were, and define the exact pathological lesion which may be present—affections, I say, which appear more of the nature of individual traits, and the essential basis of which would seem to depend on variations in that wonderful self, ego—the almost ethereal part of what Pope

Read before McGill Medical Society.

designates as the "stupendous whole," and as an illustration of these more or less psychic studies I wish to bring before you this evening a type of individual who is known as "the neurotic," in which, as Dr. Weir Mitchell states, we must never lose sight at any time of the character of the patient.

Neurotic, as you know, means nervous, and is derived from the Greek γευρογ, French néurotique, but I wish to use it in its broadest sense, as implying an individual who presents what Osler terms "an ill-defined, motley group of symptoms," which are manifestations of a morbid action on the part of the nervous system over and above the indications of simple inefficiency. The condition has been referred to as general nervousness, nervous exhaustion and neurasthenia, and the prefixes cerebral, spinal, cardiac, and gastric, have been employed to denote special localized forms. I shall dwell upon general nervousness as a whole, and more especially with the intellectual phenomena connected therewith, and as we must first have our patient, I cannot do better than use Dr. Clifford Albutt's own words in introducing to you a common type of the intellectual neurotic: "He enters your room with a brisk step and a quick, observant eye, you see a slightly built, meagre man, of sallow complexion, or if coloured, the colour painted high upon the cheek bone. The cheeks and temples are hollow, and the temporal arteries are visible under the lean skin, which often shows tanned markings, deepened during attacks of pain; the hair is straight, fine and sparse upon the scalp; the features are sharp, often prominent; the lips thin, and the skin dry; and some remnants of eczema may be seen about the chin or ears. The bodily frame is lightly and often finely built, the bony fingers and wrists and the visible sinews and radials betraying the absence of fat. Here and there, in later life, a knotty knuckle will tell of gouty parentage. The pulse, when most tranquil, usually ranges between 70 and 80, and accelerates on the least excitement. The clavicles and ribs in like manner are prominent, and the heart's apex may be seen to beat sharply before the eye; its systole to the ear is likewise short and sharp, and the second sound very audible over a wide area. The limbs are small, but often very sinewy; such persons are as active as birds, and the absence of fat in their muscles often gives to these, in states of health, the quality of hardness under the hand. Their conversation, again, is lively and voluble, often keen and brilliant, but impressionable rather than imaginative; you may generally notice in them, too, some little blinking, twitching, or tattooing trick which quickens as thoughts and words come faster. His companions will tell you that he is subject to great fluctuations of the animal spirit; gay, even fascinating in society; brisk, orderly,

and thorough in business; but at home dejected or fretful. He is a small eater, a light sleeper, and a warm worker. These persons are the heirs of every true neurosis, from insanity to toothache; and, on the whole, when we consider the infinite perturbations of intermarriage, it is surprising how true they run, or how clearly you may detect the neurotic strain in mixed descendants."

As far back as 1875, Dr. Weir Mitchell's attention was drawn to the large number of cases at his Philadelphia clinic for Nervous Diseases, which had been set down as general nervousness, and, on further investigation he found, to his surprise, that a very large number of these were men. Up to this time "this striking, this annoying, this disabling condition, had rarely been delineated in the books, or, if spoken of at all, it was as if it were entirely the sad prerogative of woman."

The prominent peculiarity of general nervousness lies in over-excitability: "A healthy organism should respond to calls upon it with an elasticity like that with which the cushion of a billiard table responds to the blow of the ball." But the neurotic patient is too easily moved, too readily excited. "The strong man becomes like the average woman, the woman like the unschooled child, and the symptoms for the most part are not utterly abnormal, but are exaggerations of normal conditions. Many of the characteristics exhibited by the nervous man on the slightest provocation are seen in the normal man at times on rare occasions, under exposure to unusual emotion. A nervous man receives a telegram; he becomes pale, his head throbs, and he opens the envelope with a trembling hand. It proves to be a message of no moment, but the effect lasts for an hour. In George Elliot's words, in her wonderful character study 'Middlemarch,' 'the frame becomes as dangerously responsive as a bit of finest Venetian crystal.'

With the tendency to be easily moved there is also a certain apprehension which applies both to the possible effects of outside influences and to the symptoms of the patient himself. What he feels he exaggerates, and he is alarmed by what he feels; knowing, also, how certain agencies affect him, he dreads them, and thus learns to shun his fellows, and so to avoid the incidents which contact with men bring about. Who has not remarked the very bashful youth or man? Watch him, say as he enters a drawing room, and observe the constrained and anxious look which his features assume, as he imagines himself the centre of everybody's gaze. The bashful man is nearly always neurotic, with his egotistic or self-distrustful ideas.

"In all such men, anxiety, fear, and embarrassment, are prone to occasion some disturbances in the sphere of motor activities, which are,

to begin with, never in such cases quite what they should be. Thus in acquired nervousness, the hand is apt to become tremulous, and under emotion of any kind this may increase, so that when conscious of being observed it becomes impossible even to sign the name."

In some cases the mental or emotional impression disturbs the vasomotor system, and we have spasm or dilatation of vessels, violent arterial throbbing, and excited cardiac action. The throbbing aorta is a characteristic symptom in some cases, and this "preternatural pulsation in the epigastrium" of Allan Burns may, as Osler says, be so forcible as to suggest an abdominal aneurism.

Often, too, the face will have a pinched expression, owing to the contraction of the peripheral vessels, and the accompanying facial spasticity will convey the subjective sensation that when he endeavours to smile he is making a rather sardonic attempt at it—the smile that won't come on, so to speak.

How the extreme of nervousness acts on the battlefield is well known. Sometimes the like happens in acquired nervousness, and emotion provokes urination or motion of the bowels. Alas, who but can appreciate what must be the feelings of the poor neurotics when the guardian angel of all normal individuals, the sphincters, desert them, for "who is there that has not felt a kind of competitive struggle, an intestinal warfare, so to speak, going on within himself, fearing the issue, and has not been thankful for the result, and full of gratitude of the little indomitable sphincter, which has averted the catastrophe."

Dr. Weir Mitchell has seen more than one nervous man who, on leaving home in the morning, would be turned back again and again to make water, and, as he states, Mr. Carpenter has long since called attention to the fact that when we watch our automatic movements, and try to make them voluntary, we at once make them difficult. Then, too, owing to this habit of watching their own physiology, as well as the hyperæsthesia which is often present, and worrying about themselves in general, these individuals acquire that morbid frame of mind which is apt to make life more miserable than any other—that of the disease fancier, and Dr. Crothers, of N. Y., even goes as far as to define neurotic diathesis as meaning a tendency to seek relief from every discomfort and pain. Here, in case you all have not read it, I cannot help repeating Jerome's lively description in this regard, contained in his "Three Men in a Boat," which stripped of its facetious vein, is only too true in many instances:

"It is a most extraordinary thing, but I never read a patent medicine advertisement without being impelled to the conclusion that I am suf-

fering from the particular disease dealt with in its most virulent form. The diagnosis seems in every case to correspond exactly with all the sensations that I have ever felt.

"I remember going to the British museum one day to read up the treatment for some slight ailment of which I had a touch—hay fever, I fancy it was. I got down the book, and read all I came to read; and then, in an unthinking moment, I idly turned the leaves, and began to indolently study diseases generally. I forget which was the first distemper I plunged into—some fearful, devastating scourge I know, and before I had glanced half down the list of 'premonitory symptoms,' it was borne in upon me that I had fairly got it.

"I sat for awhile, frozen with horror; and then, in the listlessness of despair, I again turned over the pages. I came to typhoid fever—read the symptoms—discovered that I had typhoid fever, must have had it for months—without knowing it—wondered what else I had got; turned up St. Vitus' dance—found, as I expected, that I had that too—began to get interested in my case, and determined to sift it to the bottom, and so started alphabetically—read up ague, and learned that I was sickening for it, and that the acute stage would commence in about another fortnight. Bright's disease. I was relieved to find, I had only in a modified form, and, so far as that was concerned, I might live for years. Cholera I had, with severe complications; and diphtheria I seemed to have been born with. I plodded conscientiously through the twenty-six letters, and the only malady I could conclude I had not got was house-maid's knee.

"I had walked into that reading-room a happy, healthy man. I crawled out a decrepit wreck."

But the most lamentable feature about the neurotic patient is the insomnia, and it is the one which makes the condition so difficult to overcome. for let a man have his proper sleep, and there is very little to fear as far as neurasthenia is concerned. The neurotic will faithfully curl himself up in bed in regular animal fashion, trying to persuade himself that he is going to drop off to sleep, and then the fight starts. Events of the day will begin to pass through his brain, with more or less rapidity. till the day's events become the week's, and the week's month's, and perhaps the months years, all succeeding each other in panoramic fashion. Time and again will he try to banish them, but they are almost as persistent as the shades which appeared to King Richard III in the darkness of Bosworth Field; and he will change from one side to another in a vain endeavour to coax sleep. Well might such a man, if he be a reader of Shakespeare, voice his plaint in that poet's words—

"Sleep! O gentle sleep!
Nature's soft nurse, how have I frighted thee,
That thou no more wilt weigh my eyelids down,
And steep my senses in forgetfulness?"

Perhaps after hours of such sensations he will fall wearily to sleep, only to be subject to distressing dreams, especially concerning things which may have been impressed upon his mind during the day or evening. This difficulty in getting to sleep has not been sufficiently dwelt upon, and these patients will often dread the thought of sleep, because they realize that to them it is a forced process, which it should never be.

The neurotic is susceptible to rapid fatigue, especially of the muscular system, and the sensory disturbances in this connexion are varied and sometimes striking. There is no more weary man at times than the neurotic, and he makes constant complaint of feeling "tired" or never "rested."

The hyperæthesia is striking because it is so completely subjective, and indeed it will be found all through that the symptoms complained of will be totally out of proportion to what a painstaking examination reveals, and must, therefore, proceed from subjective pathological sensations, but, nevertheless, they cause the patient enough trouble and discomfort to make him lose his happiness for a considerable period of his life.

From what I have said, you will understand that the neurotic is not likely to be one of those individuals popularly termed "one of the boys," for there is present in him a sense of nervous weakness and effort which gives rise to self-consciousness and self-distrust, and finally, to a suspiciousness towards others, and to a vague feeling of isolation and dread. This type of man might be well misunderstood (and he himself will be the first to imagine it), and his aloofness readily taken for self-conceit, which is seldom present in him, for he knows himself but too well. His temperament is essentially mobile, and he is usually sensitive, and while he may be talented, he rarely has the robustness and endurance necessary for great success.

I might go on and tell you of the numbness and heaviness of the head experienced by such men—of the ringing and buzzing in the ears, of the absent-mindedness, but I think I have mentioned sufficient symptoms to show that life, at least on this side of the Styx, is made miserable, and to indicate that the neurotic is unequal to the ordinary tasks of a fairly healthy person, and will content myself with illustrating the case of a neurotic artist in Corelli's "Romance of Two Worlds," as well as

one or two of Doctor Weir Mitchell's own cases, which I think show how the subjective sensations dominate the cases:

"In the winter of 1884, I was afflicted by a series of nervous ailments, brought on by overwork and overworry. Chief among these was a protracted and terrible insomnia, accompanied by the utmost depression of the spirits, and anxiety of mind. I became filled with the gloomiest anticipations of evil, and my system was strung up by slow degrees to such a high tension of physical and mental excitement, that the quietest and most soothing of friendly voices had no other effect upon me than to jar and irritate. Work was impossible; music, my one passion, intolerable; books became wearisome to my sight; and even a short walk in the open air brought with it such lassitude and exhaustion, that I soon grew to dislike the very thought of moving out of doors.

"But it was at night that the terrors of my condition manifested themselves. Then sleep forsook my eyes; a dull throbbing weight of pain encircled my head like a crown of thorns; nervous terrors shook me from head to foot; fragments of my own musical compositions hummed in my ears with wearying persistence—fragments that always left me in a state of distressed conjecture; for I never could remember how they ended, and I puzzled myself vainly over crotchets and quavers that never would consent to arrange themselves in any sort of finale."

The above, taken from a more or less subjective standpoint, might be said to represent, fairly typically, that type of neurotic to whom I would apply the term intensely intellectual, having as its etiological factor a too close application to mental work.

The following, from Mitchell's series, point out the effect which certain factors, of an entirely different nature to the above, may have in producing the condition:—

"M. L., æt. 58, the leader of the bar in a Western city, was forced to carry on the trial of a most important case, while his wife lay dangerously ill. From this time he began to find that he felt embarrassed when rising to speak, and that he was obliged to urinate always before speaking in court. The mere knowledge of these facts began to trouble him, and soon after he found that his emotions were less under control than they had been. At last, one day when about to sign his name, he found that his hand shook, because two gentlemen who were to act as witnesses were watching him. From this time he could no longer write, when overlooked, unless he made the most earnest effort. With these disabling conditions he began to fail in vigour and appetite, and to become excessively restless and irritable. Under fortifying treatment with long absence from home he became entirely well."

Again, a young man, æt. 18, while attending his father's funeral, slipped on the wet ground and fell into the grave. From this time he became strangely nervous, was startled readily, grew timid and apprehensive, and at last became unable to write while any one was watching the act. The tremour thus caused at last so increased that he had to give up a clerkship which he held. This condition of system came as it were in a moment, and converted a quiet, somewhat resolute person into a nervous invalid. I might quote other cases; the one I have given may suffice. This man remained in good physical health, and was thus in contrast with many cases of acquired nervousness which may, at least, be associated with states of feebleness, if they be not often traceable to these, but although such is distinctly true, the form of trouble causing weakness, malnutrition and anæmia, varies, and with its variation the intensity of the nervousness, and even its quality varies. Nor must we lose sight at any time of the character of the patient, for this also must make up a part of the case, and it will be one thing to deal with a case of congenital nervousness made worse by circumstances, and quite another to treat a person at one time firm and cool, and who has merely become nervous through disease or suffering."

In no other affection does heredity play so important a part, which, perhaps, explains why individuality is such a prominent feature. Verily, the prodigal son after sowing the time-honoured "wild oats," and thus bringing joy to the hearts of the old people, may transmit but defective "nerve force" to his offspring. Witness the long and famous neurotic history of the Kings of Bavaria.

In the acquired cases, the much vaunted stress of modern life, with its strain and worry, is given as the chief etiological factors, as also fright and grief. The ambitious youth, with but a feeble organization, is likely to fall a prey to it, and Dr. George Gould, of New York, in discussing the frequency of the so-called nervous asthenopia or "irritable eye" in neurotics, quotes refractive errors as important predisposing factors, and he illustrates his remarks by quoting the biography of many famous characters, such as Carlyle, De Quincy, and others, who were undoubtedly neurotics.

And coming to the connexion between general nervousness and other maladies, it is amazing to learn the extent of brain disease and other neural diseases which may exist without making the sufferer excitable, timid, tremulous, or in a word nervous, though the victims of general sclerosis, and still more those of paralysis agitans, are apt to suffer horribly from acquired nervousness, while in posterior sclerosis the patients are often singularly free from it.

How far visceral disease may cause it depends, as Weir Mitchell states, "a good deal on the individual, but more on the organ attacked," as we well know, for Pope has said "Hope springs eternal in the human breast," and certainly to judge from the psychical peculiarities of pulmonary disease, he was fully justified. On the other hand, the nervousness and depression which accompany disorders of the abdominal viscera are well known, and gave rise to the adage of the Presbyterian divine that "No man dies a triumphant death who dies of disease below the diaphragm."

As to the crucial question, what can we do for the neurotic? Osler's words that "many patients come under our care a generation too late" sound ominous, but much may be done in the way of prophylaxis in the case of children of neuropathic predisposition. "Train up the child in the way he should go, and when he is old he will not depart from it." There is no better than the "psychic hardening" referred to by Osler.

It has been said, with truth, that neurasthenic patients are cured, not by physic, but by the physician. Not that the anæmia, which is a most potent cause of general nervousness, must be treated, as well as any other such condition, but nervousness, whatever be its parentage, demands something more, for ony too often the symptoms which make up this annoying state, continue after we have amended the blood losses which may have caused them. There is, perhaps, in this fact but another example of the persistency of morbid habits. It is harder to unlearn than to learn—no wonder a famous Grecian flute player charged double fees to those pupils who had been taught by an inferior master.

"The man whose self-confidence has once been rudely shaken does not speedily reacquire hardihood in the face of disturbing impressions, and we have also to deal with the many instances of nervousness which arise out of moral causes or are of unknown birth. We must cut them off their routine lines, if possible, through the help of travel and change of scene, or outdoor sports," and above all means not have him moping by himself, for remember that no man is less fit for his own company than the neurotic. Said a man to Dr. Mitchell, "Colorado in summer, and horseback in winter—these are what cured me of nervousness."

The mental attitude of the nervous man demands of his physician the most careful attention, nor can we afford to disregard anything in his ways of life or his habits of thought and action. We must determine for him how far and how much he shall use his mind: whether or not it is well for him to continue his work whatever it be: what his amusements should be. I would commend Dr. Mitchell's "Rest cure" to your investigation.

And, gentlemen, in closing I merely wish to say, that I have presented the foregoing, mostly research work, as it must necessarily be at this stage, but partly also observation, together with a few stray thoughts which I happened to pick up in my occasional wanderings along the highways and byways of literature, in the nature of a short character sketch of the "Neurotic," and as illustrating to my mind, and I do hope to yours, the fact that the careful student will find in the individuality of his cases the need for the most minute study, and above all he will learn that in these neurotic conditions, the more fully he commands the confidence of his patient, the more can he effect.

Gentlemen, ours is, par excellence, the profession for the study of character, the crown and glory of life, and in the words of Samuel Johnson:

> "Let observation with extensive view
> Survey mankind from China to Peru."

BANANA FLOUR AND PLANTAIN MEAL AS A FOOD FOR CHILDREN SUFFERING FROM DIARRHŒA.

BY

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For many years past I have felt that our treatment for diarrhœa in infants and children is far from satisfactory.

This remark applies both to drugs given and to the nutrition supplied to the little patient. At the present time I will not discuss the drug treatment for diarrhœa, but will make a few remarks on the food to be given to infants and children who have the trouble.

In the nursling who suffers from diarrhœa one must regulate the mother's diet; she must stop the breast milk for a few hours and give the little one some kind of sterilized fluid, such as boiled water, barley water, rice water, etc. This is not given as a food, but to keep up the requisite amount of fluid in the circulation. The most important point to bear in mind, when undertaking to treat a case of diarrhœa in an infant, is to make up the loss. Why does a high saline irrigation do so much good in these cases? The saline is taken up greedily into the circulation and helps to fill up the vessels which are partially empty, and it raises the blood pressure which is far below the normal, the blood pressure depending largely upon the amount of fluid lost and upon the amount taken into the system. We have all seen the picture of the

young infant suffering from a severe diarrhœa, I do not mean cholera infantum, but a severe infective diarrhœa. The child looks bad and cannot sleep, the bowels moving frequently, etc. A high saline irrigation is now given (say one to two quarts, according to the age of the child), immediately the pulse is of a better character, and he falls into a refreshing sleep. As a rule diarrhœa in the nursling does not make much impression on the little one; he does not lose flesh rapidly and is fairly happy. One can easily pick them out in the out-door clinic.

We come now to the poor little one who is not nursed by the mother, and who develops a severe attack of diarrhœa. This child has been fed upon cow's milk which may have been good, bad or indifferent; others have been fed upon condensed milk, or one of the numerous patent foods. We have one broad rule in treating these little patients and it is this, stop all milk immediately. This is all very well, but we take away his staff of life, and with what do we replace it? What do we give him to make up for his thirty to forty ounces of good food? The answer is, practically nothing. We deprive him of his means of support and wonder why he does not thrive. We offer him barley water, egg albumen, rice water, arrowroot, etc. Barley water is practically nothing but water with a small amount of starch (F. Still), rice water is not much better, and albumen water is practically water. Now, as far as these are concerned, we might as well give plain boiled water, and it is more palatable. We must try to make up for the loss, and the only way to do this is to give the child some form of nourishing liquid diet. What is the cause of death in these children? Most death certificates read: "heart failure, exhaustion, etc.," but a better term would be "starvation."

When half of the fluid contents of the blood are lost from the vessels the heart has nothing to do, and gives up work. Another cause of death in these children is sinus thrombosis, due to concentration of the blood. F. Still found it only once in eighty-two autopsies in Great Ormond St. Children's Hospital.

A not infrequent cause of death in children who suffer from toxic diarrhœa is hyperpyrexia. The movements may be only three to five in the twenty-four hours, but death takes place rapidly. I have met with two such cases during the past few days; one developed a temperature of 107°, with nystagmus and cold extremities. The other had a temperature of 106.8°; both were rapidly fatal. In a case of this kind the little one's stomach should be washed out at once, a high rectal saline should be given, a dose of oil should be given by the mouth, strychnine should be given hypodermically, and a small amount of sterilized

water should be given frequently; these poor little infants keep their mouths open begging for a drink.

Now, if the above liquids prove of so little value, what must we give the child to keep up his nourishment and to fill up the empty vessels? For the past three summers I have had good success with banana flour and plantain meal. I want it to be thoroughly understood that I do not recommend banana flour and plantain meal as an ideal infant food. They are both rich in starch, and we all know that it is difficult for a child under six months of age to digest much starch. I strongly recommend it as a valuable food to tide over a critical period. They are both nourishing, easily digested and both possess astringent qualities. Furthermore, banana flour is easily obtainable, and can be made at the home of the little patient. There are some differences between the two flours; the banana flour is dark in colour and has a slightly astringent taste, and is not as palatable as the plantain meal. The plantain meal is whiter, and is taken more readily by the child. I do not think that it possesses quite as much astringent quality as the banana flour. Again, the banana flour is more easily obtained than is plantain meal which is much more expensive, even in the raw condition. However, plantain meal is an astrigent food. The late Dr. Livingstone during his travels in Africa proved the efficacy of this fruit; his men being much troubled with dysentery they were fed upon plantain fruit and a rapid cure resulted.

Now, as to the method of use of these flours for infants, we mix one teaspoonful to one dessertspoonful of the flour with a little boiled cold water, we then add four to five ounces of barley water, and let it come to the boiling point This can be given every two or three hours. For children between twelve and eighteen months of age, it can be made into a pap or porridge. For older children it is made into banana or plantain cakes or into pancakes. In fact a good cook can serve it up in a variety of ways. Quite a number of my patients have gone through a siege of severe diarrhœa without taking any medicine, and have depended solely upon banana flour or plantain meal.

Later on, in the fall, I intend to report a large number of cases fed by this method. However, at the present time I will mention a few cases.

Case I.—In 1908, my youngest case was an emaciated infant of five weeks of age. This little one's bowels were moving at the rate of fourteen times in twenty-four hours, it also vomited persistently. When it developed diarrhœa it was fed upon (or starved upon) barley water, etc. I washed out the stomach of this little six pound infant, and put it on the usual astrigents, such as bismuth, etc. I nearly lost my little patient. I then started with the banana flour, one dram to two ounces of water,

later on I increased the quantity. My little patient rapidly improved and was soon well again.

Case II.—In April, 1908, I was called to see baby M., aged nine months, who suffered from simple diarrhœa; the bowels moved five to six times a day, the motions were small and green. I gave banana flour and he was well in twenty-four hours.

Case III.—In 1908, baby C., aged four months, developed a severe attack of infective diarrhœa. The bowels moved fifteen to twenty times in twenty-four hours; the motions were like water, foul and of medium size. The temperature was about 103°, and the pulse very frequent. Various liquid foods were tried, but they seemed only to aggravate the trouble. I gave plantain meal and the diarrhœa was soon arrested. As soon as we changed the food the diarrhœa recurred, and we had to keep the infant on this food for quite a time. However, the child recovered completely.

Case IV.—Baby W., age one year and four months, suffered from diarrhœa, the bowels moving about eight times in the twenty-four hours. The motions were small in amount and green in colour, the temperature was 102°, and the pulse 130. I gave the banana flour, and in one day the motions were reduced to one-half in frequency. Soon the child was quite well.

I might say that in many cases, in conjunction with the banana flour and plantain meal, I have been using a drug called divi-divi. However, my next paper, which will appear in a short time, will deal with the combined treatment.

The banana flour is manufactured in Jamaica and the British West Indies; the unripe green banana is used, for as a banana ripens the starch is converted into sugar. The unripe banana fruit is cut into thin slices and is dried either artificially or by the sun's rays. When it is perfectly dry it is ground into flour. The fruit contains about eighty per cent. of moisture, and thus it loses fully eighty per cent. of its weight through the process of drying. Banana flour cannot be manufactured at a low figure in Canada or the United States, as it takes fully thirty-five bananas to make one pound of banana flour. It can be manufactured much cheaper in the West Indies or in any banana producing country.

A few points in regard to the banana might prove of interest. The banana plant is not propagated by seed, but by young plants, which bud from the underground stem (or bulb as it is called) or an older plant. This bud at first gets all its food material from the parent bulb, but very soon forms leaves and roots of its own. When the young plant is six or eight months old it is about nine to ten feet high, and its own bulb is

eight to ten inches across. This is cut clean away from the parent and the roots trimmed off. It may be planted as it is, but as a rule it is cut down to within six inches of its bulb. This bulb soon shoots both from the centre and from eyes all around. One shoot takes the lead, monopolizing most of the food material supplied from the bulb, and this leading shoot is known as the plant, the others are the suckers. The underground bulb is the storehouse of food material for the roots, leaves, suckers, and finally, for the flowering shoot and the fruit.

Upon the supply of food material stored up in the bulb depends the number of hands a banana bunch will consist of. Some bunches have six hands, others nine or ten,etc. There are several varieties of bananas known in Jamaica, but the only one cultivated for export is that known formally as the Martinique or Pouyat banana, or commonly called the Jamaica banana, which cannot be rivalled.

The following analysis of banana flour is by Dr. J. T. Donald, official analyst to the Dominion Government:—

Moisture	10.02 %
Ash	4.95 %
Protein	3.06 %
Fat	.52 %
Fibre	.55 %
Dextrose	7.14 %
Tannin	1..29 %
Other Carbohydrates	72.47 %
	100.00 %

The ash contains:

Phosphoric acid	10.52 %
Potash	37.24 %

It will be readily seen that banana flour is a nourishing as well as an astrigent food. The tannin increases its astrigent quality to a great extent. It is rich in carbohydrates; however, it contains a fair amonut of protein.

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THE DIAGNOSTIC SIGNIFICANCE OF PAIN IN THE BACK.

BY

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The diagnostic value of localized pain in the back, and the frequency with which systematic examination of that region is over-looked, are reasons for laying before you some points which have impressed me during the past year.

The material has been drawn from the clinic of the Royal Victoria Hospital, and from its variety presents certain difficulties to anything like proper classification. In chronic cases the old maxim of "expose the back," and this means from the occiput to the sacrum, must be observed. By this method alone can the examiner fully satisfy himself.

It might be well here to mention the popular superstition that pain in the back, especially if it is anywhere around the lumbar region, must mean diseased kidneys. If one goes over the history of patients suffering from Bright's disease, from stone in the kidney, or from septic infection of the kidney, it is surprising to note how few cases, if any, have pain in the back; that is to say, pain referred to the vertebral column. In most of these cases the pain is a dull ache or soreness referred to the lumbar region, and in the case of colic it is usually referred along a definite path. So, also, the number of cases of pain in the back, popularly referred to some displacement of the pelvic viscera, is far too great to have any definite scientific reason for localizing the cause in that region, and the proof of this lies in the fact that so many of the leading gynæcologists of the day are very conservative in their operating on this class of cases.

The back ache so often met with in people of sedentary habits, especially women, and which can be directly traced to chronic constipation, I would just mention. But these various popular causes of back ache are very general, and I would like to bring to your attention certain localized facts with regard to pain in the vertebral column.

It must be remembered that referred pain is so frequent in organic disease of the vertebral column that the origin of intractable pain referred to any area supplied by spinal nerves, may frequently be discovered by thorough examination of the spinal column at the level of the nerve root. The method of the examination is simple. The patient, being stripped from occiput to sacrum, has the back thoroughly exposed to a good light; the vertical symmetry of the column is noted, as also the

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symmetry of the scapulæ; any posterior deformity is readily brought to light, and in these cases it is well to note the symmetry of the triangles formed on each side of the body by the normal contour of the body subtended by the arms hanging directly downwards. After this preliminary inspection the mobility of the column should be tested; forward, backward, and lateral bending, as by this means any limitation is readily revealed.

The site of the pain and the character are of great importance. In the neurotic conditions pain is usually general, and variable, both in intensity and as to site. In the organic conditions the pain varies whether the patient is in the upright or recumbent position. There is the variability of day and night pain; the character, whether of the gnawing, boring kind or the acute cramp-like, and whether this pain is localized, or whether referred on exertion to some distant part.

The most usual sites of pain that we have noted in relative frequency are, (1) The dorso-lumbar, (2) The lumbo-sacral, (3) The dorsal, (4) The cervical.

As I have already observed, classification of conditions is difficult, and we will first take up certain functional conditions and afterwards those of organic nature.

A number of cases present themselves who suffer from pure neurosis. This diagnosis must be made with the greatest care to exclude organic trouble; in fact, to be certain of excluding tuberculosis such cases are, at times, admitted to the wards to have the tuberculin test made. As a rule such is not necessary. In most cases the history of trauma is elicited, and, strange to say, at times the trauma may have antedated many years,—25 years in a case recently seen in consultation, the actual period of disability. Though pain is stated to have always been there since the trauma, careful interrogation usually brings out the fact of frequent violent exertion without necessitating subsequent rest in bed. In taking the history there is a rather garrulous description of the varying intensity of the pain, and every possible detail about it is related with pleasure by the patient. Examination: The movements of the spinal column are reviewed while at the same time conversing freely with the patient about the character and the time of maximum pain. This device usually permits the examiner to verify the full range of motion, flexion, extension, right and left lateral inclination and rotation, all of which are usually normal and not subject to any limitation. Reverting to the local symptoms is followed almost immediately by the complaint of pain on certain movements. Tenderness may be noted at certain levels, and these frequently vary if the pressure is practised

alternately from above downwards, or *vice versa*. In addition there are usually areas of hyperæsthesia on one side or other of the vertebral column, and very frequently an area of maximum pain is referred to the site of original trauma. The skin reflex is interesting owing to the marked variation according to whether the mind of the patient is diverted or no. By firmly stroking the skin toward the area with a pin head, in the latter case, a marked reflex is obtained, and so definite that the area may be outlined, while when the patient's mind is diverted no reflex is obtainable. Besides, the variation in the hyperæsthetic area does not, in most cases, coincide with any tenderness over the spines of the vertebral. The conduct of the patients during examination is very variable; at times they are well under control, at other times, as in a case recently seen, a condition resembling hystero-epilepsy comes on during the examination. Concussion of the column, either by pressing the head or striking the heels, or subjectively by the patient, as when driving in a carriage, does not cause pain. Where there is some flattenning of the normal curves or some rigidity of the spinal muscles, the greatest care must be taken, and if any doubt exists it would be wise to have the patient put to bed and the tuberculin test given in order to exclude the organic lesion most frequently met with, tubercular spondylitis.

Summary: (1) Indefinite history of trauma; (2) Varying site of pain and irregular anatomical distribution; (3) Normal mobility; (4) Peculiar skin reflex; (5) Absence of pain on concussion.

The organic lesions, with pain as a prominent feature, may be considered under the heading of actue and chronic.

Under the first variety, I would like to mention certain traumatic lesions which give rise to very puzzling phenomena. Several such cases have come under notice and were very puzzling from the complexity of their symptoms. No mention is here made of the injuries from direct contusions but to a class which is larger than would be at first imagined, where the disability and pain date from some violent or else prolonged muscular exertion. The importance of this class must be realized. It was first brought to the notice of the writer while with Ludloff.[1] in Breslau, where artisans presented themselves for disability claims. The number of men from machine shops who complained of lame back and severe pain after heavy exertion was very striking. When examined, some limitation of the spinal movements was noted, also tenderness either over one spine, or frequently just one side of a spinous process. The X-ray was used with negative results. In some cases there would be pain referred along some nerve trunk. A provisional diagnosis was

made in many cases of a tearing of the ligament between the transverse or spinous processes, and I really believe that in many of these cases there was an actual fracture or partial avulsion. As an example of this class, I beg to present one of my own cases:

The patient, a woman aged 42, came complaining of severe pain in the lumbar region. Her primary disability dated to a great muscular effort made in catching a heavy woman when falling. This occurred four years previous to date of consultation. Examination revealed marked tenderness over the right transverse process of the 4th lumbar vertebra. This was ascertained while the patient was lying on her face, as the muscles were far too rigid to allow such relaxation in the erect posture. There was also a neuritis of the 3rd and 4th lumbar nerves of the right side. The patient was markedly neurotic and, several examinations were necessary before a diagnosis could be made. The reflexes were exaggerated, but no Babinski was present. The X-ray showed a fracture of the transverse process of the 4th lumbar vertebra, but the duration of the disability suggested the possibility of an implantation of tuberculosis upon the site of the original injury. Fortunately, the tuberculin test was negative, and fixation of the back gave very satisfactory results.

Spondylitis of Pott's disease is the most serious of conditions which early causes pain in the back besides being the most frequent. For many reasons it may be wise to premise this condition whenever pain is a constant feature, until this diagnosis can be excluded. We have found in so many cases, especially those of the cervicodorsal region, that the lesion causes pain for a long period before flattening or deformity is present. When you consider the pathological picture, this becomes self-evident as deformity necessitates a good deal of destruction of the body of the vertebra before the hump is produced. Moreover, the whole dorsal region is so well splinted by the anatomical bony structure that a much more advanced lesion is required to cause deformity than in the dorso-lumbar or lumbar region. At these latter levels the muscular spasm and rigidity are relatively early in the disease, since the lumbar vertebral column has no additional bony support. The superincumbent weight of the head, upper extremities and thorax, on a weakened lumbar column, will early require the support and rigidity of the lumbar muscles whenever the patient is in the upright posture. In the recumbent position the pain is often increased, especially if the bed has very pliable springs; for then, as you are all aware, the normal lumbar lordosis flattens and greater pressure is brought to bear on the bodies of

the vertebra, and still more on that one which has diminished bony elasticity.

Most cases of Pott's disease no matter what level, give the history of pain for a prolonged period, and the pain is of the character of a dull ache. On exertion, especially stooping forward, the patient has increase of pain and complaint of weakness and stiffness in the back or neck. This last symptom is the result of the rigidity of the vertebral column and gives rise to the characteristic attitude assumed by these patients in picking up an article from the floor. The patient will frequently diagnose his case as rheumatism, and try to work off the stiffness, which naturally causes increase of pain. Inability to do usual work, avoidance of driving or riding in street cars will be early noted; and these patients will volunteer the information that when jolted, in the sitting posture, they steady themselves by lifting their own weight with their arms, and will seek to rest the back by placing their elbows on the arms of the chair.

In Pott's disease, therefore, affecting the body of the vertebra, pain is an early and very important symptom. In addition, tenderness, especially over the spinous process of the affected vertebra, and some tenderness also over the process above and below, is to be elicited. If the collapse of the vertebral body, in the destructive process, is not symmetrical the column is inclined to one side or another,—scoliosis, and where this is the result of the disease, there is frequently pressure on one of the nerves at its exit from the foramen.

Another method in which direct pressure on the nerve may be brought about is by disease affecting the articular facets or some lateral portion of the vertebra. The thickened tissue, whether granulation, abscess, or breaking down material, will cause a typical pressure neuritis. The patient frequently complains of pain at the peripheral distribution of the nerve, and when the part is examined anæsthesia with a boundary zone of hyperæsthesia may be noted. In searching for the cause repeated questioning may bring to light certain complaints such as "stiff neck," 'clumsy gait," or "lazy nature"; the complaint of pain in the back may be nil.

Illustrating such a condition, I would call attention to a radiogram of the cervical vertebræ of a woman aged 60 years, who had been treated for a long time for neuritis over the shoulder. The cause is really a tubercular lesion involving the articular facets on the left side between the 4th and 5th cervical vertebræ. In this case there was definite neuritis, stiff neck and increase of pain when actively moving about. These last two signs should have given warning to examine for Pott's disease.

Another example is a patient, a boy aged 18, who for two years suffered from pain in the calf of the left leg and heel. In addition he had a stiff back, and though of an athletic family was unable to play any games. There was a definite neuritis of the 4th lumbar nerve; on examining the back there was lateral deviation, muscular rigidity, but no special tenderness. The X-ray showed a definite involvement of the lateral portion of the 4th and 5th lumbar vertebræ, probably the articular facets.

These cases serve to illustrate the great importance of examining the back in all cases, especially where anything in the history may suggest some lesion at that site as being a cause. However, where neuritis is present the tuberculin test must be given with the greatest care, as in many cases the reaction of hyperæmia and swelling in a localized lesion, frequently restricted by a dense capsule or aponeurosis, may be very dangerous to the nerve pressed upon.

The usual pain in Pott's disease is located, as we have said above, and if the destruction is very great with pressure on the cord, the signs of pressure paraplegia naturally result; of these there is no need to treat here as the deformity usually at once gives the clue.

Before going any further, the character of the pain and deformity in osteoarthritis, or rheumatoid arthritis, must be noted. This usually occurs as a stiff back, occassionally with pain referred out along several nerve trunks. The tenderness is usually located over the spinal foramina, and is due to osteaphytes pressing on the nerve roots, as well as the pain at the site of the disease. Frequently the X-ray and examination for other signs of "rheumatic" disease will aid in the diagnosis. In most of these cases inspection of the back shows the rather "poker back" type, but we do not meet nearly so many of these characteristic cases in Canada as across the border. The knuckle, or small hump deformity, such as one meets with in Pott's disease, rarely occurs in ostearthritis, and we do not, as a rule, get localized tenderness over any particular spinous process. Rigidity and general pain in the back are quite usual signs.

Of the static conditions, and by static, I mean those conditions which are due to malposition or to a change of relation in anatomical parts and not disease, there is one which has enlightened a great many cases of so-called lumbago, and that is subluxation or strain of the sacro-iliac joint.[2] Pain in conditions of this kind is usually complained of as a lumbago, and the number of cases which present the typical spasmodic attacks as in true lumbago and yet which can be completely relieved by attention to the lesion in the sacro-iliac joint, is very sur-

prising. The onset of pain is variable. In some cases it is a soreness and stiffness in the lumbar region. Again, it may be a stiffness with pain alone of one or both sciatic nerves, and, thirdly, it may be very severe and in fact a complete disability until slight displacement is relieved. The patient in this last case can hardly get out of bed, and it is impossible for him to straighten his back. There is no particular pain on concussion, the general health is perfectly good, and the disability may date in man, from strain, frequently idiopathic, and in women, it is very frequent after any prolonged illness, around the period of menstruation, and frequently when extra housework is suddenly indulged in. Here, however, in most cases the maximum tenderness is not located to the vertebral column. Tenderness and swelling are noted over one or both sacro-iliac joints. There may be also tenderness over the sciatic or both sciatic nerves, and the subjective complaint of pain in the shin or pain in the calf is very frequent. This pain is due to the close relation of the lumbo-sacral cord.

The subluxation can be at times relieved by manipulation, and where this displacement has been apparently due to upriding on one little ridge of the articular facet, a click can be readily felt and in some cases heard.

It is surprising to note how many cases of what we have been accustomed to call lumbago or myalgia, can be directly traced to this lesion, and the relief by the regular treatment of this joint or joints is very striking.

In some cases at the clinic we have noted that in addition to this sacro-iliac strain, in a certain number, there is exaggerated lumbar lordosis, and accompanying this some tenderness along each side of the vertebra. This tenderness practically corresponds with the exits of the spinal nerves, and in these cases the treatment must include the correction of the exaggerated lordosis; the support of a pendulous abdomen.

It is a pretty good working rule, in a case of sciatica, to examine these sacro-iliac joints in order to exclude any lesion there as being a cause.

Albee,[3] in New York, examined 50 cadavres, and in all of these found a complete joint with its cartilage and synovial membrane fully developed.

Anatomically, the sciatic nerve or lumbo-sacral cord crosses in front of the lower one-third of this joint immediately in front of the aponeurosis and is easily involved in any affection of the joint. We have found this frequent in so-called sacro-iliac strain, and the last three cases of tubercular sacro-iliac disease which I have seen came with the complaint of severe and intractable sciatica. In addition to these, one case of a

very rare condition—sacroma of the same joint—had the same complaint.

As the pain of scoliosis, whether rhachitic or static in origin, we find that it is more of the dragging character on the side of the concavity of the deformity, and occasionally a spinal nerve may be pressed upon. In general this is not the case, and the patient has a dragging pain and weakness which without question result from the distorted anatomical arrangement both of skeleton and viscera. Support of these naturally must be carried out.

Finally, mention must be made of these various static deformities which result really from a misplacement of the centre of gravity of the body. The work of Lovett,[4] of Boston, has clearly shown how very many cases of chronic back ache are due to this cause, and by careful measuring and locating the centre of gravity and correcting the posture of the patient from ill-fitting corsets and unbalanced shoes to more rational wear, the cure has been quite complete.

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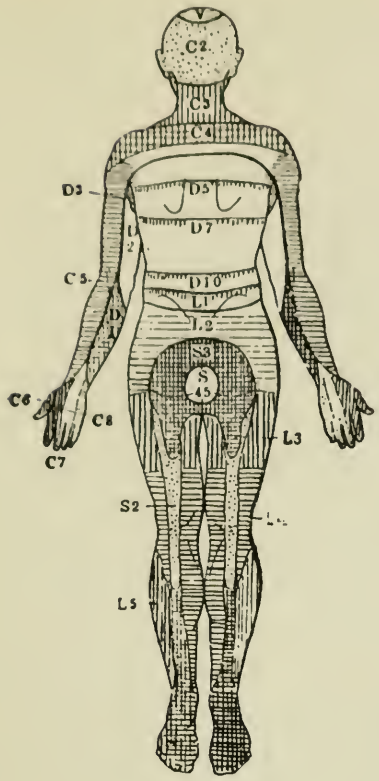
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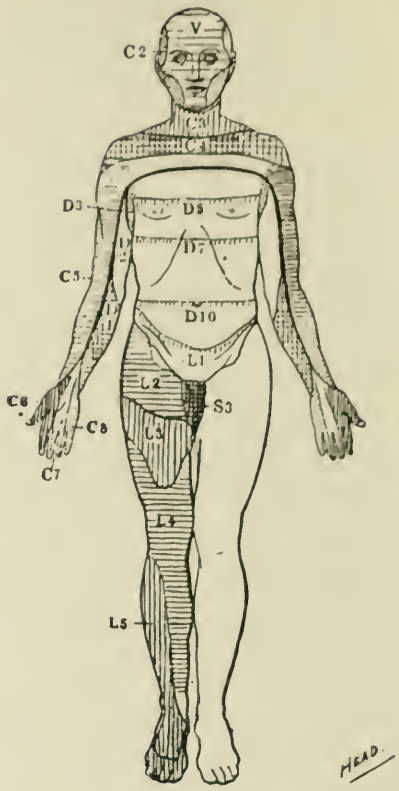
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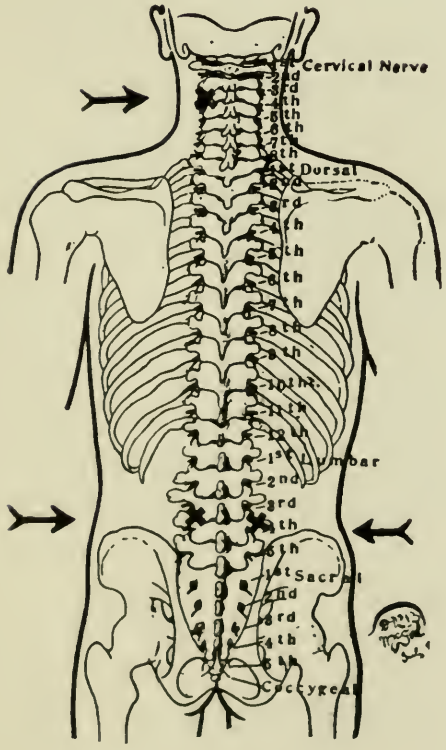
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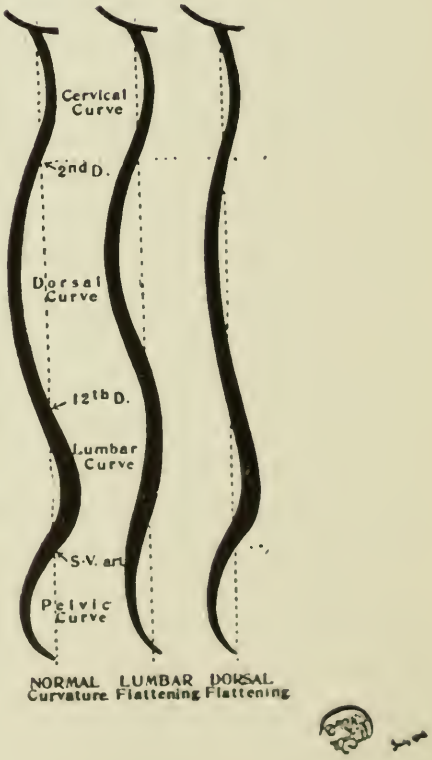
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A CASE OF HÆMATOPORPHYRINURIA.

BY

H. B. CUSHING, B.A., M.D.

On July 15th, 1909, I was called to see an elderly lady with an acute attack of vomiting and a history of passing blood in the urine. Her relatives gave the following history: She had always enjoyed good health until seven years before, when she had a slight attack of hemiplegia affecting the left side. She recovered completely from the paralysis, but ever since then had been subject to periods of mental depression, lasting some weeks, during which she became somewhat melancholic, lost her appetite and suffered from intractable insomnia. Lately these periods had become more frequent and prolonged and, at the time I was called to see her, she had been in bed for nearly three months, greatly depressed, eating only on persuasion, and sleeping only after the use of hypnotics, which, however, had always been given in great moderation. On July 14th, it was first noticed the urine looked bloody and the next day she complained of epigastric pain, and vomited whenever anything was taken into the stomach. No cause for this acute attack could be elicited.

On examination, the patient was a woman 69 years of age, somewhat emaciated and anæmic. Her temperature was normal, her pulse 80, strong and of somewhat increased tension, the arteries being slightly thickened. Her tongue was very dry and she had complete anorexia. The examination of the abdomen showed slight tenderness in the epigastrium but no other abnormality save a somewhat prolapsed right kidney. Her bowels had not moved for two days. The urine was of a deep port wine colour, acid in reaction, specific gravity 1015, and to my surprise gave no reaction fr albumen, and, microscopically, showed no casts or blood-cells. I then tested for blood, spectroscopically, and with the benzidine test, and could get no reaction. Being quite at a loss to account for its peculiar appearance I consulted Dr. A. A. Bruere, who confirmed my observations and declared the colour must be due to some pigment, but probably not to an aniline dye, as it could not be dissolved out with ether or chloroform.

The next day the patient was no better, the vomiting continued, the bowels did not move even after an enema, and she appeared weaker. A careful enquiry revealed no cause for the pigment in the urine, no unusual article of food had been taken and there had been no change in her medicines for the previous two months. She had been taking phenolphthalein periodically for her bowels, but this is not known to colour

the urine. She was also taking powders of sulphonal, grains iv, and trional, grains vi. She had taken one of these every night for nearly two months, but never more than one, and had never had bad effects from them.

The third day the vomiting had ceased, the patient was able to take some nourishment, and her bowels moved naturally with a normal stool. However, she appeared very weak and mentally depressed, and her urine was even darker than at first, being almost black in colour. I was still at a loss for a diagnosis when Dr. Bruere reported his further analysis of the urine, and I must confess his report took me altogether by surprise. He stated that by isolating the pigment and examining it spectroscopically he had been able to identify it as hæmatoporphyrin, which was iron-free hæmatin and derived from a disintegration of the blood; that when it appeared in the urine in such large quantities it was almost invariably due to taking small doses of sulphonal, trional, or tetronal for long periods of time, and further, that most of the cases reported had ended fatally.

I immediately instituted the treatment usually recommended, *i.e.*, stimulants and the administration of alkalies, but although the vomiting and constipation did not recur, the patient became progressively weaker, passed urine and fæces involuntarily, gradually sank into coma, and died ten days after the peculiar colour of the urine was first noticed. The urine remained of the same character to the end. Two days before death I thought I could distinguish signs of a left-sided hemiplegia, but the patient was too deeply comatose to make certain. No autopsy was performed.

Hæmatoporphyrin was discovered by Hoppe-Seyler in 1871; it is said to be iron-free hæmatin, and to be derived from the blood. Garrod claims that it is always present in the urine in minute traces. It has been found in larger amounts in the urine in many acute fevers, and especially in cases of hæmorrhage into the intestines from any cause, when the absorption of the blood from the bowel probably causes the pigmentation of the urine. Large quantities such as occurred in this case have generally followed the ingestion of sulphonol, trional, or tetronal. I was able to find in the literature quite a number of reported cases; one writer collects twenty, and almost all the cases were very similar in their course. Most of them occurred in anæmic women; all followed the use of the drugs in moderate doses taken repeatedly for some time, the periods ranging from one week to three months. One peculiarity is that the action of the drug seems harmless or beneficial for some time, and then the fatal symptoms arise suddenly. About 75

per cent. of the reported cases resulted in death. The symptoms were almost invariably as in the case reported above, viz., pigmentation of the urine acute vomiting, with constipation, progressive weakness, with obscure nervous symptoms, such as ataxia, mental confusion, or some form of paralysis, and, finally, incontinence of urine and fæces, and death in coma.

I could find no adequate explanation of the immediate cause of the hæmatoporphyrinuria. It is undoubtedly due to some action on the blood and not to a kidney lesion. It appears to be an idiosyncrasy, only occurring in certain cases, while other persons can take the same drugs for long periods of time without ill effect. It can be produced in rabbits by the same means. Autopsies show nothing pathognomonic, but usually some form of degeneration of the kidneys, liver, or heart-muscle.

Cases are recorded which have occurred after only a few doses of sulphonal, but in most of the cases the drug has been taken regularly for several weeks. Large single doses never cause it. It is claimed that the danger can be avoided by periods of intermission in the use of the drugs, and that the symptoms are due to a gradual accumulation in the system. In the case reported, only a small number of powders had been prescribed originally, with directions for them to be taken occasionally as emergency arose. The patient had had the prescription repeatedly refilled on her own responsibility, and had been taking the powders every day without consulting a physician.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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THE TEACHING OF MEDICINE.

In the last Number of this JOURNAL we reprinted so much of the contents of the Bulletin of the Carnegie Foundation for the Advancement of Teaching as referred to Canadian medical schools. The report was not especially flattering to all the Canadian institutions; indeed, two at least came in for a criticism which might fairly be characterized as severe. One of these was the Halifax Medical College. The profession in Nova Scotia has not accepted the rebuke with entire humility of spirit. On the contrary, the Medical Society of Nova Scotia, in session at Yarmouth July 6th and 7th, after hearing an address upon the subject by Dr. D. A. Campbell, unanimously agreed that the report was "prejudiced, inaccurate, and misleading."

We take much pleasure in publishing elsewhere in this Number Dr. Campbell's address with the discussion upon it, and the resolution which arose out of that. Those who are acquainted with the personnel of the teaching staff will find it hard to disagree with Dr. Stewart when he characterized the employment of the word "mercenary," as "unjust and entirely uncalled for." Dr. Stewart very properly remarked, that it is the attainments and character of its graduates which mark an institution, and not the architecture or even the equipment of its buildings. What rather gives colour to this view is the fact that amongst the physicians who received their education at the Halifax Medical College are persons who are the equal of any who have graduated from institutions which are spoken of with high praise in the Report. It may not be

generally known that the greatest anatomist in America, and a surgeon equal to the best, received his early training in Halifax. In a controversy of this kind the men of Nova Scotia can very well be trusted to look after themselves.

OBSTETRICAL TEACHING IN EUROPE AND AMERICA.

The committee appointed by the American Gynecological Society to study the present status of obstetrical education in Europe and America, and to make suggestions for the improvement of obstetrical education in America, has just completed its labours and submitted its report. The committee was composed of seven well-known obstetricians representing seven of the leading medical schools in the United States, viz., E. B. Cragin, of Columbia; J. Clifton Edgar, of Cornell; C. M. Green, of Harvard; E. P. Davis, of Jefferson; J. W. Williams, of Johns Hopkins; J. C. Webster, of Chicago; and B. C. Hirst, of Pennsylvania, the last mentioned being chairman. The committee obtained reports from Herbert Spenser for Great Britain, from Professor Winter (Königsburg) for Germany, from Heinrich Peham (Vienna) for Austria, from Th. Wyder (Zürich) for Switzerland, from Professor Launerlonge for France, and an unsigned report for Italy.

As regards the teaching in the United States, more or less full details are given of the methods employed in Columbia, Cornell, Harvard, Jefferson, Johns Hopkins, Chicago and Pennsylvania.

There is such wide divergence in the various schemes of instruction that it is almost impossible to reach any satisfactory basis for comparison. Even among the seven schools in the Uniter States there are radical and fundamental differences, and it would be difficult to select any one whose methods could be called really typical. It is also very much open to question whether Professor Winter's account of the teaching in Königsburg can be considered as typical of what is done in Germany, or that of Professor Launelonge as typical of the methods employed in France. In comparing the various reports, the following points seem to be of chief interest:—

1. The tendency to abandon or curtail didactic lectures, and to devote more time to clinical lectures and conferences, to ward classes and out-patient instruction, and to work upon the mannikin. In Great Britain, Germany, Austria, and Italy, in Columbia, Cornell, Harvard, and Jefferson, the didactic lecture is an important feature of the course. In Switzerland the attendance upon the theoretical lectures is not obligatory; in France "the courses are no more given in a theoretical way, but are principally practical demonstrations either in the lecture rooms

or in the hospitals (women's wards)." In Johns Hopkins, Chicago, and Pennslyvania, systematic lectures have been entirely or almost entirely abandoned, and the endeavour is being made to teach the students in small classes.

2. In Europe more attention seems to be paid to obstetrics than to gynecology; in the United States gynecology occupies an important place. With regard to Great Britain, Herbert Spenser, says, "A course of lectures thirty or forty or more each year, is given in obstetrics in all London schools. It usually extends over two years, and lectures on gynecology are given at many schools in addition to those of obstetrics."

3. In Europe the teachers of obstetrics are the only ones who teach the diseases of women and their surgical treatment. In the Uniter States, of the first fifteen medical schools, nine have separate chairs of obstetrics and gynecology, while six have the chairs combined.

4. The tendency to increase the number of cases of labour attended by each student and to exact a certain term of residence in a maternity hospital. In Great Britain each student must attend twenty cases, and University students (Oxford and Cambridge) must have previously attended cases in the wards for at least one month. In some hospitals there is "personal attendance on about fifty cases by each student." In Germany "each student in the tenth Semester must live a month in the clinic, where he observes and conducts about forty labours, and performs the minor operations." In France "the students of the two clinical departments are inscribed turn about night and day to make a stage in the hospital wards, and follow the labour hour by hour till period of delivery. During a term they can follow about fifteen cases or more if they wish to do so." There are two terms of six months each. In Columbia "each student during his five weeks of practical service delivers personally on an average seven or eight cases, and sees from forty to fifty deliveries." In Cornell "students are required to reside for at least two weeks in the Manhattan maternity or other hospital, and personally confine at least six women." In Harvard "in addition to the many cases witnessed, the graduates of 1909 attended personally an average of twenty cases." In Jefferson, in addition to hospital work, each student has "from two to six cases delivered in tenements and under supervision and instruction." In Johns Hopkins there is "obligatory attendance of at least five cases of labour under supervision in the ward. By means of the elective work of the fourth year many of the students see from 25 to 40 out-door deliveries." In Chicago attendance upon five cases is required; but Professor Webster remarks, "We feel that the number of obstetric cases which should be attended by stu-

dents is too small. It should be at least twelve. We intend to increase this requirement as our clinical facilities improve." In Pennsylvania the number of labours attended by each student averages 7, "One week's residence in the South Eastern Dispensary for out-patient work" is required. In marked contrast to all this practical work provided for the student and required of him before he can present himself for his final examination, is the regulation which is in force in Italy; "the students in medicine and the midwives cannot perform any operation before the end of their course of studies."

5. The character of the examination which the graduating student is required to pass. After all, it is the final examination which determines the seriousness with which the student avails himself of his clinical opportunities. The student is essentially an opportunist. To most, the chief end of student life is the passing of the final examination, and not the preparation for life's work; consequently, the student is apt to concern himself but little with things which will not help him with his examiners. No matter what may be the clinical advantages offered or the clinical instruction given, if there is not a searching clinical examination at the end, the results will be unsatisfactory and disappointing. The information given in the reports regarding the system of examination is meagre and insufficient. Nothing is said about the examinations in Great Britain, Germany, France, and the United States. In Austria "the examination consists of diagnosis in pasturient and pregnant women and in gynecological patients, and operations performed upon the mannikin." In Switzerland "in the final examination there is required:

1. Practical demonstrations of sufficient knowledge in the examination pregnant and pasturient women and of gynecological patients.
2. The performance of several obstetrical operations on the mannikin.
3. A theoretical oral examination on obstetrics and gynecology.

In Italy "the examination is only theoretic."

The recommendations of the committee are as follows:—

"We recommend that the teaching of obstetrics should occupy at least two years of the medical course, and that those expecting to practice obstetrics, should be urged to avail themselves of elective opportunities.

That the number of labour cases personally attended by each undergraduate student should be at least six; under supervision and instruction.

Character of Instruction.

We recommend all the known methods of teaching this branch of medicine, namely:

Didactic lectures.
Clinical conferences.
Ward classes and touch courses.
Hospital and out-patient instruction.
Mannikin practice in operative obstetrics.
And recitations.

Of the first three methods, we recommend especially clinical lectures and conferences.

We recommend that ample facilities should be afforded students to make antepartum examinations, including inspection, abdominal palpation, pelvinetry, fœtometry vaginal examinations, etc.

We recommend that a two weeks' hospital residence should be required before the out-patient practice.

Scope of Instruction.

It is recommended that as obstetrics at present includes pregnancy and pasturition, their complications and consequences, and the complete recovery of the womann after labour, that obstetric instruction should include the medical and Surgical treatment of these conditions.

The tendency of obstetrics to become more surgical in practice, and to require a surgical training, is evidenced by the fact that in the medical schools of Europe, and in more than one-third of the first fifteen medical colleges of this country, namely, Columbia, Cornell, Jefferson, Medico-Chirurgical, Tulane, Yale, Long Island, Harvard, Johns Hopkins, Rush, Bellevue, Western Reserve, Michigan, University of Pennsylvania, California, the chairs of obstetrics and gynecology are combined under one head. Of these 15 medical schools, 6 have combined chairs.

In Canada the medical schools are much handicapped by the regulations of the licensing boards. As the requirements in the different provinces are not uniform, the curriculum has become overburdened in the attempt to satisfy the demands of all the boards. The new five year course will give some relief, the fifth year being devoted entirely to clinical work. But we must recognize the fact that ward work is very exhausting, and that a student cannot get much benefit if the hours are too long and work is too varied. The specialties will, no doubt, absorb a good portion of his time in the fifth year, especially as the boards are demanding more and more of that kind of work. It is just a question whether we are not broadening out too much and making it too hard for the student, whether we are not trying to teach him too much, and do too much, and not giving him time enough to think and assimilate. Attendance upon obstetrical cases requires much time, and in the hurry

of his sessional work the student is apt to regard this as lost time. It is not always the best men of the year who are keenest about getting a large number of cases; it is often the lazy man, the potterers, who love to busy themselves in spending hours in the waiting and doing nothing. The colleges are not expected to turn out skilled obstetricians any more than they are expected to turn out skilled surgeons or physicians. It is really the training which counts, rather than the number of cases attended. Ten or twelve cases well worked out, under competent supervision, and with good careful guidance and instruction, will be more likely to teach correct methods and form good habits than a hundred cases managed carelessly in the tenements. The solution of the problem would seem to be in the establishment of summer courses, post-graduate courses, elective courses, and short terms of residence in hospital to afford those who intend to practice obstetrics the opportunity to get a fair amount of experience and proficiency. If that could be done, the college course proper could be devoted to the exposition of the scientific side of the subject, the teaching of proper methods, ward classes, clinical lectures and conferences, in fact, all that can be best taught personally and individually, man to man. There is a great deal in personal magnetism, personal influence, and enthusiasm; and so long as these qualities are developed and utilized in the teaching of obstetrics there will still be an important place for the didactic and clinical lecture.

Messrs. Lea and Febiger announce for immediate publication a new edition of Gray's "Anatomy." This, we believe, is the nineteenth edition. The work has been subjected to a thorough revision by Dr. E. A. Spitzka, Professor of Anatomy in the Jefferson Medical College. The changes and improvements in text and engravings are so extensive that the entire work has been reset.

There is an asylum for idiots at Orillia. The place of the superintendent fell vacant. One would think that some knowledge of medicine would be a consideration in filling the place. Apparently the Ontario Government attaches little importance to that accomplishment, for we read that Mr. Joseph P. Downey has been appointed superintendent. We are further informed that the new position is worth $2,600 a year with house and supplies, and is regarded as one of the best in the gift of the Government. Mr. Downey's qualifications are set forth in the following terms: Joseph P. Downey has been the member for South Wellington on the Conservative side since 1902, and has been re-elected at every general election since. He has always been con-

sidered a hard worker in the cause of his party. Mr. Downey was for a number of years editor of the Guelph "Herald," and since he severed his connexion with that paper has devoted himself to special writing. He is interested in Cobalt, and has a farm in Norfolk County. Mr. Downey is 65 years of age, and a Roman Catholic.

That a man is a Conservative, a hard worker in the cause of his party, a member of a Legislature, an editor, a special writer, interested in Cobalt, a farmer, and 65 years of age, does not on the face of it qualify him for that intimate association with idiots which this new appointment demands. We think that some member of the medical profession could have been found who was better qualified.

Reviews and Notices of Books.

VACCINE THERAPY, ITS THEORY AND PRACTICE. By R. W. ALLEN, M.D. 3rd Edition. Demy 8-vo., pp. 277; H. K. Lewis, London. Price 7/6 net.

We are pleased to see the third edition of Dr. Allen's work appear; it is by this time quite well known, and there is need to say only that it is a very satisfactory presentation of the subject. Each edition offers some modification of technique and much good information upon the practical results obtained. We note with interest the increasingly large doses employed by the author and others; that he no longer uses a small dose, one or five million gonococcus vaccine, but goes at once to larger doses, with marked success; that some striking successes have been attained by the use of large doses in acute septicæmias of staphylococcal and streptococcal nature; and that there is a tendency to use less frequently the medical control, that is, to perform the laborious work of determining the opsomic index in relation to each dose; not that this is yet entirely to be dispensed with, but with many forms of vaccine it may be so. Notable, too, is the constant extension of the use of vaccines into new fields. Where success has not been obtained the author is quite frank in his statement of the case. The book is to be recommended.

THE EAR AND ITS DISEASES. By ALBERT A. GRAY, M. D., Laureate of the Lenval prize in Otology, International Medical Congress, 1909, Surgeon for Diseases of the Ear, Victoria Infirmary, Glasgow. Baillière, Tindall & Cox, London. 12/6.

We have much pleasure in recommending Dr. Gray's book as a text book of exceptional merit.

The whole subject is dealt with in a most thorough and satisfactory manner. A chapter on the acoustics of hearing is very useful and interesting.

In dealing with the question of operative treatment of chronic suppurative otitis his views are most sound and conservative.

The book is beautifully illustrated with photographs, 37 of which are stereoscopic. A small stereoscope accompanies the volume.

We wish the author a full measure of success in his publication.

E. H. W.

PHYSIOLOGY AND PATHOLOGY OF THE SEMICIRCULAR CANALS, BEING AN EXCERPT OF THE CLINICAL STUDIES OF DR. ROBERT BARANY, WITH NOTES AND ADDENDA GATHERED FROM THE VIENNA CLINICS. By ADOLPH E. WEISHOFF, M.D., and ROYAL S. COPELAND, A.M., M.D. Paul B. Hoeber, New York. $1 00.

The above title gives a good idea of the contents of the book.

The authors have given a good translation of Barany's work which attracted so much attention three years ago, and which was reviewed by the present reviewer in this journal at that time.

The work is a very satisfactory translation, and will no doubt find a welcome in many quarters.

Coming at this date, it is somewhat late as most of the work is already incorporated in the recent text books of otology.

E. H. W.

DISEASES OF CHILDREN. By EDMUND CAUTLEY, M.D., F.R.C.P., Senior Physician to the Belgrave Hospital for Children, Physician to the Metropolitan Hospital, etc. London: Shaw & Sons; Toronto: D. T. McAinsh & Co.; 1,041 pages. Price $8.50.

This splendid volume of over a thousand pages comes to us with all the authority of the London school of medicine, whose work, though not showy, is none the less solid. The book itself in its making bears the stamp of the best English workmanship. In the outset, we should like to testify to the comfort which there is in reading a book which contains no pictures. As the author says, the kindergarten teaching of medicine by pictures, diagrams, and models, is for students, not for serious practitioners. In view of the work which has been done in London during the past ten years upon diseases of children, the time had come for a new and systematic book, and Dr. Cautley has filled the need. We note next the ample space which has been allowed for a consideration of surgical affections; although we think that the author rather under-states the amount of time which is necessary for a physician to spend upon surgical training. Other facts worthy of note are the increased attention which is given to maladies which have been recognized only recently. These are, as stated in the preface to the book,

hypertrophic stenosis of the pylorus, acidosis, delayed anæsthetic poisoning, and cleido-cranial dysostosis. Also a new nomenclature is suggested in connexion with the disorders of bone formation. The recommendations for treatment, though they are very abundant, are free from dogmatism, and have regard to all the circumstances of the individual patient. The contents of the book fall into twelve sections which in turn are made up of seventy-three chapters. As an illustration of the freshness of the material, we may cite the chapter upon poliomyetitis and polioencephalitis, in which the experiments of Flexner, Lewis, Landsteiner, and Levaaiti, receive mention. This book is likely to remain for many years the authority in English upon diseases of children.

Diseases of the Eye. By G. E. De Schweinitz, A.M., M.D. With 351 illustrations and seven chromo-lithographic plates. Sixth Edition. Philadelphia and London: W. B. Saunders Company, 1910; Canadian agents: The J. F. Hartz Co., Limited, Toronto. Price, cloth, $5.00 net.

The sixth edition of Dr. De Schweinitz's diseases of the eye has just appeared from the press. This work has been reviewed several times in this journal since the appearance of the first edition in February, 1892, so that little needs to be added to our approbation of it. The new edition contains a special notice of the obstetric injuries of the cornea, the ocular complications of nasal accessory sinus diseases and a clear description of the various new operations practised in ophthalmic surgery. The book is profusely illustrated, and really ranks as a standard work both for the student and practitioner. It is with much pleasure that we strongly recommend it.

The Practical Medicine Series. General Editor, Gustavus P. Head, M.D., and Charles L. Mix, M.D. Volume I. General Medicine. Edited by Frank Billings, M.D. and J. H. Salisbury, M.D. Volume II. General Surgery. Edited by John B. Murphy, M.D. Volume III. The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, M.D., Albert H. Andrews, M.D., and Gustavus P. Head, M. D. Series 1910. Chicago: The Year Book Publishers, 40 Dearborn Street. Price $1.50 Price of the series of ten volumes $10.00.

The present volumes are part of a series of ten issued at about monthly intervals, and covering the entire field of medicine and surgery, each volume being complete for the year prior to its publication on the subject of which it treats. This series is published primarily for the general practitioner, although the arrangement in several volumes enables those

interested in special subjects to buy only the parts they desire. We have frequently commended these volumes, and we desire to do so again.

Elements of Pharmacy, Materia Medica, and Therapeutics. By Sir William Whitla, M.A., M.D., LL.D. Ninth Edition; thirty-second thousand. London: Baillière, Tindall & Cox, 1910; Crown, 8 vo., pp. 672. Price 9/ net.

This, the ninth edition, may fairly claim to be a new book,—so much of it has been re-written, revised, and brought up-to-date. Yet it has not lost any of the qualities which made it a prized companion for generations of students since 1881, when it was first issued. The section on the non-official remedies is much more elaborate than in previous editions, and testifies to the large place which these preparations now have in practice.

Diseases of the Genito-Urinary Organs. By Edwards L. Keys, Jr., M.D., Ph.D., Clinical Professor of G. U. Surgery in the New York Polyclinic Medical School; Surgeon to St. Vincent's Hospital; Lecturer on Surgery Cornell University Medical School. 975 pages, illustrated. Price $6.00. New York: D. Appleton & Co.

All who have been familiar with the work of the elder Keys will welcome this new volume by Edwards Keys, Jr., while others, if there are others, unfamiliar with the work of Keys—father and son—and who are interested in urological matters, cannot afford to neglect it.

It is an eminently practical work, designed to assist the general practitioner and student as well as the more specifically trained, and as such is to be heartily recommended.

Not the least of its commendations is the fact that it represents the personal experience of its author and his father, so that little is to be found that has not this personal touch. To a certain extent, a new arrangement has been attempted, the old anatomical classification being discarded in such instances as gonorrhœa, acute infections of the genito-urinary tract, tuberculosis, stone, etc. Such diseases being treated in their manifestations throughout the whole tract, as has been the case with tuberculosis of late years.

What, perhaps, appeals to widest interests is the treatment and prognosis of gonorrhœa. This is eminently conservative, yet on the whole encouraging after the many flurries which have beset the practitioner who must reckon with this infection and who must not.

Throughout, one cannot but be struck with the various changes which progress in these matters has rendered necessary. There re-

mains but a faint semblance to the work of ten years ago. The part played by the X-ray, the cystoscope and urethral catheter, become more and more prominent. Diagnosis of the kidney function, pyelography, etc., receive an amount of attention that was formerly to be looked for in but a few special books and papers. Indeed, the advance in accurate urological work is nowhere better seen than really it is throughout the whole book. We seem at last to have caught up with European work, and to have recognized the importance of the other kidney.

Among other things one notices that genito-urinary tuberculosis holds its wonted place. B. coli infection has received the additional attention which those who have been interested in renal infections would look for; while the kidney itself stands out more prominently as the primary cause of other acute infections of this tract. Urinary chill is said to be always accompanied by some renal disease, never to be neurotic, though its other vagaries remain unexplained. The contention is just. Calculous anuria has gained in importance from the viewpoint of immediate operation.

A long chapter on syphilis is appended, called for by the teaching arrangements of most schools, and a chapter on operatial measures closes the book.

It is a longer work than Casper's, but calls this work strongly to mind. Both are written by men who have something to say — something of their own.

R. P. C.

Physiology of the Special Senses. By M. Greenwood, Junr., M.R.C.S., etc., etc. Edwin Arnold, London, 1910. Price 8/6 net.

The author of this work points out in a modest preface that it is intended chiefly for two classes of readers: students of psychology who may desire to obtain more information regarding the physiological side of the senses than is usually found in works professedly dealing with psychology; and those who wish to go further in this department of the wide realm of physiology than the ordinary student. The anatomy and histology of the sense organs is not dealt with as the author desired to keep this work within very reasonable limits of space. The entire treatment of the subject is confined to the 236 pages of a small octavo volume, so well printed that it is a pleasure to look upon it. There are a certain number of illustrations including some original diagrams.

The writer states the sources on which he draws for his material and refers the reader who would go further to other books and papers; and assuredly, if the reader of this work does not wish to forage outside its limits, fault cannot be set down to the author. Nor are the references confined to writers in the English language only, as not rarely happens in English books, but the work is the outcome of wide reading.

The author shows equal sympathy with psychology and physiology which is not a common qualification in these days of extreme specialization.

Altogether, the reviewer finds this a most stimulating and in all respects admirable book.

The writer has performed a wisely selected task, and done it in an unusually creditable manner.

Röntgen Rays and Electro-Therapeutics. By Mihran Krikor Kassabian, M.D. Second Edition. Philadelphia and London: J. B. Lippincott Company; Charles N. Roberts, Montreal.

This book forms part of Lippincott's new medical series which is edited by Francis R. Packard, M.D. It is a handsome volume of 540 pages, and contains many illustrations. The first edition appeared in 1907. At that time we spoke in terms of high commendation of the work, which now we desire to repeat. The progress in this interesting department of science has been so rapid, and so many new devices have been contrived, that a new edition was necessary to make the record complete. Chapter VI, which deals with radium and other radioactive substances, is especially interesting and is written in a spirit of scientific moderation. All workers in electro-therapeutics probably possess the first edition, and they will be glad to know that a second is now available. To surgeons and physicians who desire to keep themselves informed of the status of this method of healing the book will also be a necessity. A melancholy interest attaches to the work, as the author died as soon as it was completed from burns received in the practice of his profession. As early as 1902 the nails became affected, and two years ago it was found necessary to amputate two fingers. The axillary glands became involved and the malady then extended to the chest wall with fatal results.

Dr. Kassabian was an Armenian, born in Cæsarea, Asia Minor, 42 years ago, and in 1894 come to the United States to study medicine. He entered the Medico-Chirurgical College of Philadelphia in 1898, and in the same year, while the Spanish-American War was in progress, served in the Hospital Corps of the army. After graduating he

became instructor in electro-therapeutics and X-ray treatment in Medico-Chirurgical College. In 1902 he resigned from this position to become director of the Röntgen ray laboratory in the Philadelphia General Hospital, a position that he held until the time of his death.

DISEASES OF THE HEART AND AORTA. By ARTHUR DOUGLAS HIRSCHFELDER, M.D., Associate in Medicine, Johns Hopkins University, with an introductory note by Lewellys F. Barker, M.D., LL.D., Professor of Medicine, Johns Hopkins University. 329 illustrations by the author. Philadelphia and London: J. B. Lippincott Company. Price $6.00.

There are many books upon this subject, but we welcome this one because it does not look exactly like any of the others, and because the author is in a position to write a book at first hand. He has for many years worked in the laboratory upon physiological and pathological problems at the same time that he has pursued clinical work. He may be said to know the laboratory side of heart experimentation and the bibliography of the subject thoroughly, to say nothing of many personal contributions to that division of science which he has made. His constant work in clinical fields serves as a corrective or an assistance to the tendency to be purely technical. So furnished, Dr. Hirschfelder is in an excellent position to write successfully this book. He has attempted to write at once for the technician and the practitioner, which is a hard task; the present reviewer speaks from the standpoint of the latter. The purely technical part is readable, and readily understood, and the bibliography is extensively given, and the physician of ordinary attainments will find a compression of this part of the subject to the minimum, while the laboratory worker will find the bibliography supplement the necessarily shortened text.

Less than a hundred pages at the beginning suffice for general considerations and methods, and there is a commendable simplicity about many of the illustrations which makes them useful. Wherever possible the author employs a graphic, diagrammatic drawing of the heart or the vessels to indicate the position of the valves, the distention of the chambers or the quality of the blood which can be read at a glance, parallel with the tracing which is under consideration. The electro-cardiogram, with which most practitioners are as yet not at all familiar, obtains adequate, though not undue prominence. Following this introductory part, the various general muscular changes are taken up, then the localized alterations of valves, followed by certain inflammations such as pericarditis, aneurysm, and by the discussion of questions such as the bearing of pregnancy on heart disease. A comparatively short section on

functional diseases of the heart, including the "thyroid" heart, closes the book.

The illustrations are numerous, and in general good, especcially the diagrammatic ones, which are very clear and self-evident. The volume contains 632 pages, is well indexed, and as stated before, the bibliography given with each chapter is very extensive.

MENTALLY-DEFICIENT CHILDREN: THEIR TREATMENT AND TRAINING. By G. E. SHUTTLEWORTH, M.D., and W. A. POTTS, M.D. Third edition: Crown, 8 vo., pp. 236. London: H. K. Lewis; Philadelphia: F. Blakiston's Son and Co., 1910. Price 5/.

The first edition of this book was published in 1895, by the senior author. It gives a general and particular statement of the institutions that care for mentally-deficient children in different parts of the world, and a resumé of the methods employed, with a special consideration of the processes upon which the methods are based. We do not imply that the book is in any sense a catalogue of hospitals, but upon the rapid multiplication of these in many countries the author fixes the interest of the casual reader upon the subject. Since 1898 it is notable that the number of mentally-deficient children housed in curative institutions in the United States has more than doubled. Especially interesting are the chapters upon etiology and upon treatment, subjects in which the authors' long experience has enabled them to speak with authority; the technical parts of the work are illustrated and amplified by case reports. We wish the third edition the success it merits in increasing the interest that is taken in these forms of disease; it is good that the practitioner should know how much can be done for such children.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

THE ACUTE INFECTIONS.

Among the hundreds of papers on tuberculosis the most interesting are those dealing with the alleged presence of tubercle bacilli in the circulating blood. The astonishing statement of Rosenberger, in February, 1909, that tubercle baccili had been isolated by him from the blood of every case of a series of 50 patients suffering from various forms of tuberculosis, was taken by most clinical and laboratory workers *sub judice*. His technique was of the simplest, consisting in the withdrawal of 5 cc. of

blood from the vein of the arm, which was then diluted with an equal quantity of 2 per cent. sodium citrate in normal salt solution; this was well shaken and placed in a refrigerator for 24 hours, when the sediment was pipietted off and a thick smear-preparation made, dried and then laked by means of distilled water; this was now dried and fixed and stained in the usual manner. As a rule, "tubercle bacilli" could be demonstrated in the first slide prepared, although sometimes three slides were necessary. His findings were confirmed by several clinical men (Forsyth, Peltz and Menhurhall) but usually in small series of cases. Negative findings were reported by Burnham, Lyons, Mohler, Ravenel and Smith, Hewatt and Sutherland, and most recently Burvill Holmes. The source of error has been pointed out by Brau, and confirmed by Burnham, Lyons and Burvill Holmes to be acid fast bacilli which are present in the sediment of the distilled water used to lake the blood smears.

A "typhoid cutaneous reaction" was tried by Floyd and Barker. Highly virulent agar cultures grown for 24 hours at 37°c. were washed with normal salt solution; this emulsion was incubated for 4 days; it was then sterilized in the hot-water bath at 60°c for half an hour; this was now standardized after the method of Wright, and later centrifugalized and the clear supernatant fluid used for inoculation; the extract was stronger that that used for the ophthalmo test and equalled 1 billion per c.mm. The technique for the inoculation was identical to that for the von Pirquet reaction. During the first 24 hours at the site of inoculation there appears a moderate red areola 0.5 to 1 cm. in diameter, but there are no vesicles or œdema or constitutional symptoms; the areola disappeared in 48 hours. Of 28 typhoid cases it was positive 19 times; in two paratyphoid cases it was negative as well as in 15 cases other than typhoid.

A most excellent paper by Strouse, and another one by Fussel, have appeared on "The diet in Typhoid Fever." I will quote chiefly from the former. A typhoid patient on the ordinary milk diet loses 200-600 grams daily (7-20 oz.), which is made up of water, fat and protein of the body tissues. The opinion of most investigators is that a more liberal diet prevents to a great extent the protein loss due to fever as well as that due to starvation. A normal individual of 70 kilos requires 2,300 calories in the 24 hours, but in fever there is increased heat production which necessitates 2,800 calories; if this amount be not given the patient will burn up his own tissue to supply the deficit, but 1,500-2,00 cc. of milk produce only 1,000-1,400 calories, hence 3-4 litres of milk would be necessary for the caloric needs. Now, in typhoid the absorption of the

most easily digested food, including milk, is 5-10 per cent. less than normal. Further, it is impossible to prove that food, such as egg or meat, will reach the Peyer's patches in a more solid form than milk which enters the cardiac orifice a fluid and leaves the pylorus a solid. Barrs, Shattuck, Thayer and Kinnicutt, have found that with a more liberal diet the death rate is lower, there are fewer perforations and hæmorrhages and only a slight increase in relapses. abdominal pain, nausea, vomiting, and tympanites are less common. The duration of the illness and convalescence is shorter. The authors, therefore, recommend a dietary as given by Shattuck.

L. H. Spooner, of Boston, gave his experience with prophylactic antityphoid inoculations carried out among the medical and nursing staff of the Massachusetts General Hospital, where ward infections occur each year. The technique was similar to that of Wright and was as follows: A 24 hour agar culture of B. typhosus was washed into a sterile tube; the number of bacilli per c.mm. was counted by means of a Zeiss blood platelet counter; the tube was then placed on a water bath at 53° c. for one hour; this suspension was diluted with normal salt solution so that 1 ccm. = 400 million bacilli. Several inoculations were given at intervals of 3 days, beginning at 50 millions and then 100 millions. Of the 103 persons inoculated none developed typhoid fever, though continually exposed. The blood from these inoculated persons showed an agglutination reaction in dilutions ranging from 1 to 10 to 1 to 500.

Carcinoma.

Among the mass of literature on this subject, two papers stand out prominently on account of their importance clinically.

One is a paper by Elsberg, Neuhof and Grist, entitled "A skin reaction in carcinoma from the subcutaneous injection of human red blood cells." Their method differs from that of Crile in that it is *in vivo* and not *in vitro*. Briefly, it consists in the subcutaneous injection of 5 minims of a suspension of washed red blood cells, which have been left on ice for 24-48 hours. In about 5 hours there appears at the site of injection an irregular, raised, boggy and tender oval area with well defined margins; this is followed by a greenish ecchymosis. In 69 cases of undoubted cancer the reaction was present in 89.9 per cent., while it was negative in 95.4 per cent of 325 non-cancerous cases. When the disease was far advanced it was uniformly negative.

Neubauer and Fischer have recently reported upon "The presence of a peptide-splitting ferment in carcimomatous gastric juice and its diagnostic significance." Friedrich Müller, several years ago, suggested that the delay in gastric digestion in carcinoma was due to the presence of

an autolytic ferment. The proof of such a ferment has been rendered possible by the work of Fischer and Abderhalden upon the peptides, and more especially their relation to various ferments. No peptide is known that is broken up by the gastric juice, while there are many that are acted upon by the pancreatic juice and the organ ferments. The authors made use of glycyl-tryptophan, which, when split into its component parts gives a red-violet ring with bromine water due to the free tryptophan. They first proved that the juice of carcinomatous-tissue splits this polypeptid very rapidly, but not in the presence of equal parts of n/10 Hcl, even though the latter be neutralized by calcium carbonate. Further, they found that normal gastric juice, both in animals and man, did not split the glycyl-tryptophan. Their method was as follows: The gastric contents were first tested for blood and bile, both of which would act as ferments; then in the filtered juice free tryptophan is tested for in the usual manner; if all these tests are negative 10 cc. of the filtrate are taken and a little glycyl-tryptophan is added, the mixture overlaid with toluol (to prevent bacterial decomposition) and then placed in a thermostat at 39° c. for 24 hours; 2-3 cc. of the juice are pipetted off, 2-3 drops of 3 per cent. acetic acid are added; then bromine vapours are carefully poured in; the mixture is shaken when a rose colour will appear if tryptophan be liberated; if negative on the first test, one needs more bromine till the fluid is coloured yellow, when if the pink shade now does not appear, the test may be considered negative. The test was negative in 26 cases of gastric ulcer, hyperacidity, etc., and positive in 17 of 19 undoubted, and in 6 of 10 possible cancer cases.

Syphilis.

The relation of "syphilis to aneurysm" has been admirably discussed in a recent paper by Osler. He first points out that syphilis itself, or in its various nervous manifestations, was responsible for 6,000 deaths in England in 1907, and aneurysm for an additional 1,140. A luetic aortitis is characterized by the localization of the process to the first part of the aorta, or about the origin of the great vessels, or lastly just above the point where the aorta passes through the diaphragm: the intima is scarred and puckered by narrow linear furrows and scattered areas of translucency. Microscopically, the media shows necrosis, fragmentation of the elastic fibres, round celled infiltration with here and there giant cells; the intima is atrophied or thickened in places, but rarely calcified, while the adventitia shows a round-celled infiltration about the vasa vasorum or even an obliterative endarteritis of the smaller vessels. The spirochæta pallida is often demonstrable. Osler admits

that lues is not the only cause of aneurysm, which may be due to any of the other acute infections as typhoid, etc. Ordinary atheroma does not lead to aneurysm, but rather seems to protect against it. The paper closes with some interesting statistics on the frequency of aneurysm; thus there were 99 aneurysms among 3,100 autopsies, or 1 in 31 at Baltimore. Osler obtained a definite history of lues in 58 per cent. of his private and 40.9 per cent of his hospital cases.

During the past year Leo Brieger, of the Sinai Hospital, has published a series of papers on what he calls "Thrombo-angitis obliterans." This is a definite clinical and pathological entity characterized by a thrombotic occlusion of arteries alone or both arteries and veins, giving rise to pain, intermittent claudication, redness of the limb when in the dependent and blanching when in the elevated posture, pulseless vessels, trophic disturbances and often gangrene. There is no evidence that either erythromelalgia or Raynaud's disease is dependent upon an organic obliteration of the arteries or veins.

Tabes Dorsalis.

Among the current literature of tabes dorsalis a paper by Klippel and L'Hermitte upon nasal crises merits a passing remark. These crises may occur early or late in the disease, and consist of a tickling in the nose with a subjective bad odour and disagreeable taste. Sometimes there may be sneezing or spasmodic cough with lacrimation, rhinorrhœa or periods of excessive nasal secretion. Pathologically, one finds disease of the olfactory tract and the fifth nerve.

Amaurotic Family Idiocy.

H. Vogt, in a recent number of the *Archiv für Kinderheilkunde,* has described the symptomatology and pathology of the condition known as amaurotic family idiocy. He points out that in addition to the infantile type first described by Warren-Tag and Sachs, there is a juvenile type clinically identical with the former, though not appearing until the 2nd to 4th year. In both types there is a family tendency, with either neuropathic or psychopathic diathesis, there is often a blood relationship in the parents; the infantile type is almost peculiar to the Hebrews: lues and tuberculosis play no rôle. In both types there is blindness, paralysis and idiocy. In the infantile cases the eye grounds show optic atrophy and a peculiar change in the macular region consisting of a whitish zone with a dark brown or cherry red spot. In the juvenile type there is only optic atrophy. The course is progressive and ends in death from marasmus by the 2nd to 3rd year in the former

and 4th to 16th year in the latter. Both types depend upon a most widespread and generalized disease of the nerve cells throughout the entire central nervous system. Macroscopically, the brain may show no change, though two of Sachs' cases presented low types of cerebral convolutions, and three other cases have possessed brains of unusually firm consistency. Microscopically, one finds a primary cell disease with slight secondary changes in the nerve fibres. Special stains show that it is primarily a disease of the interfibrillar protoplasm, but not of inflammatory origin. There is swelling of the cell body with gross alterations in its shape, disappearance of the Nissl bodies, an eccentric position of the nucleus and vacuolization of the protoplasm. There is a profound disease of the ganglin-cells of the retina with atrophy at the fovea (hence the cherry red spot,) while around it the retina becomes thickened, cutting off the red colour of the choroidal vessels. The optic atrophy is due to the extensive disease of the nerve cells and nerve fibres.

It may not be out of place to briefly abstract a paper by Shuttleworth on Mongolian imbecility. In this disease the characteristics are noticeable at birth and consist in features which bear an extraordinary resemblance to the Mongolian—the face being broad, the hair straight and wiry; the skin sallow; the palpebral fissures oblique and almond-shaped, while the nose is flat and snubbed with expanded alæ nasi. The skull is brachycephalic with marked flattening of the occipital region. The scarred, fissured tongue with papillated surface, is fitfully protruded. The stature is small, and the lax ligaments enable the child to assume unusual postures. A deficient mentality of varying degree is present and marked by a general backwardness, a want of originality, but with remarkable powers of imitation, a retarded speech, and a placid disposition. Mongolian idiots form 5 per cent. of all imbeciles in England. The brain shows coarse primary with few secondary convolutions, an absence of annectant gyri and shallow sulci. The cortex is thin. Microscopically there is a marked rarefaction of the cells and thinning of the fibres.

Leukemia.

So many papers have appeared upon the various diseases of the blood-forming organs that it is difficult to give even a brief review of them. Perhaps the most important work is that by Hirschfeld and Jacoby who, repeating the work of Ellermann and Bary, successfully transmitted "chicken-leukemia;" of 49 hens inoculated, 18 developed true leukemia and 4 pseudoleukemia; subcutaneous inoculations proved

negative, while intravenous inoculation was successful. The disease developed in 1-5 months and was manifested by a progressive anæmia, a marked leucocytosis, especially of the lymphocytes; the emulsion of bone marrow, spleen, liver, etc., proved negative when passed through a Berkefeld filter, yet cultures by all ordinary methods remained sterile. Attempts to transfer the disease to pigeons, rabbits, and guinea-pigs failed. The authors believe that each species has its own specific leukemia.

Post, in a careful paper on acute myeloid leukemia, advances some interesting facts about the origin of the myeloid foci in the organs other than the bone marrow. According to Banti they are metastases from the bone marrow by the blood stream. Schultze and Ziegler also believe that they originate in the marrow but further develop in the organs without forming a definite infiltrating tumour-like growth. Post, however, believes that these foci develop from pre-existing fœtal relics of myeloid tissue, which is stimulated to growth by a specific irritant. This is certainly true of the spleen and glands which contain myeloid elements in postembryonic life and certain acute infections. He admits that there is no proof that the non-hæmatopœtic organs contain myeloid tissue in fœtal life; he accepts Schridde's beliefs that in the embryo the cells of the vessel-walls are the mother cells of the myeloblast and erythroblast; that post-embryonically the endothelial cells of the capillaries of all viscera can, under certain conditions, develop into myelo- and erythroblasts.

Diabetes.

Many clinical papers on diabetes mellitus have appeared. The one of greatest clinical interest is a paper by Dubois and Veeder on the total energy requirements as determined by the Pettenkofer-Voit chamber. The patient was brought to nitrogen balance, while enough fat and carbohydrates were given to meet the individual caloric requirements. A normal person was first studied and subsequently a severe, and lastly, a mild case of diabetes. The number of cubic centimetres of CO_2 per kilogram of body weight were 3.95 for the normal, 3.75 for the severe diabetic, and 4.04 for the mild diabetic. The authors conclude that the total energy requirement of diabetes does not differ from the normal. In addition to the 31-35 calories per kilogram of body weight required by the normal individual at rest, the diabetic should be given enough extra calories to cover the loss of sugar in the urine. If this be not done there is a breaking down of the body protein and fat.

MacCallum in an experimental study on the relation of the islands

of Langerhans to glycosuria came to the following conclusions: "When a portion of the pancreas is separated from the rest and its duct ligatured it undergoes extensive atrophy, a tissue remaining which is apparently composed of the islands of Langerhans and the remnants of the pancreatic ducts. If the rest of the pancreas be removed the atrophied remnant is capable of warding off glycosuria even when considerable amounts of dextrose are ingested. When this atrophied remnant is removed also, glycosuria appears at once spontaneously. Whether the glycosuria would persist until the death of the animal remains to be determined, but the experiment suggests the possibility that there may be some compensation on the part of other organs both with regard to glycosuria and faulty assimilation of fat after the loss of the pancreas. The experiment, in so far as it was successful, was intended as a demonstration of the specific control of carbohydrate metabolism by the island of Langerhans."

Ringer, from an interesting series of experiments on the influence of adrenalin in phlorizin diabetes in dogs, disproved Blum's contention that the glucose excreted in adrenalin diabetes was derived from fat. He first starved a dog which was kept in a cold room to render it glycogen-free; next a phlorizin diabetes was produced, and then adrenalin was given, which if Blum's contention be true should have caused a rise in the glucose-nitrogen ratio; such did not occur, except in one animal which was not rendered glycogen-free by sufficient exposure to cold. The author does not accept the renal origin of adrenalin diabetes for hyperglycæmia can be produced by injection of adrenalin after nephrectomy! He agrees with Straub and Ritzman who assign the glycosuria to an increase in the blood pressure with resulting anæmia from constriction of the blood vessels, and consequent imperfect oxidation; there results a demand upon the glycogen with a resulting higher glycæmia and glycosuria, as occurs in asphyxiation.

Two papers, by Cohen and LaWall, on pentosuria point out that this condition has no symptomatology. There are three varieties (1) alimentary, i.e., when the phenomena follow ingestion of food rich in pentose-producing substances (e.g., fruits and sweetbreads); (2) complicatory pentosuria, i.e., in association with glucose, as is not uncommon in diabetes, and (3) essential pentosuria, in which excretion of pentose is persistent, independent of diet and not associated with diabetes. The tests for pentose are a slight reduction of bismuth salts; with Fehling's solution a greenish turbidity followed by a yellow precipitate. It is not fermented by yeast and is optically inactive. But the crucial test is the formation of crystals of pentosazones which have a melting

point of 156-168° c. as compared with 204° c. the melting point of the dextrosazones.

The Cammidge Reaction.

In regard to the value of the Cammidge reaction as a diagnostic aid in diseases of the pancreas much has been written, and many divergent opinions have been expressed. Nine papers may be summarized as follows: From the figures given by these authors the reaction was positive in 47 and negative twice when the pancreas was found at operation or autopsy to be diseased. Further, it was positive 8 times and negative 28 times where no disease of the pancreas existed. The most favourable statement is by Maass, who concludes that a negative reaction excludes pancreatic disease, but a positive reaction speaks only for the probability of pancreatic disease. Roth, on the other hand, concludes that it is of no great diagnostic value.

C. P. H.

D. A. Campbell, M.D. "Medical Education in Nova Scotia." (Read at Fift-Seventh Annual Meeting of Medical Society of Nova Scotia, held at Yarmouth, N.S., July 7, 1910.—*Maritime Medical News.*

Mr. President and Gentlemen:—

With your permission I now desire to call your very special attention to a matter of vital bearing on medical education in Nova Scotia, a matter which deeply concerns the Provincial Medical Board, as the legally constituted guardian of such education, and one, therefore, which calls for the earnest consideration of this Society as the body which appoints six members of that Board, and which, moreover, has the whole care of the medical profession of this Province in its keeping.

Some of you may be already aware that "The Carnegie Foundation for the Advancement of Teaching"—a body richly endowed by Mr. Carnegie and having its headquarters in New York—has recently compiled and published a bulletin of some 350 pages, devoted to the subject of "Medical Education in the United States and Canada," in which is discussed first its history, its present condition, and its proper condition, while the latter half of the book is devoted to a more or less detailed account of the equipment, facilities, and status of each of the 155 Medical Schools in the Republic, and of the eight Medical Schools in the Dominion.

The aim of this work, as I understand it after a pretty careful reading, is to sweep or drive out of existence about four-fifths of the Medical Schools of the United States, and about half of the Medical Schools of Canada; and how aptly and ingeniously the various essays and reports

are fashioned to support and further that destructive aim, is evident from almost every page of the bulletin.

Thirty-one of the Medical Schools of the Republic, and four, or at the most five, of the Medical Schools of the Dominion, are marked for preservation, or amplification, while one hundred and twenty-four schools in the United States, and three or perhaps four, in Canada, tre plainly marked for slaughter, and to use the language of the Report: among those whose "speedy demise" is aimed at is the Halifax Medical College.

The main or most serious charge against the college is that it is mercenary or "commercial" in its spirit and ideals, a charge which its whole history, and the character of the men connected with it since its inauguration as a Department of Dalhousie University forty-three years ago, most emphatically disproves.

But I had better give you the exact words of the report or criticism from the Carnegie Foundation's bulletin.

I shall now read to you from page 320, giving part of the report of the Halifax Medical College as follows: "Three fourths of the fees are distributed among the professors, and the disposition of funds is reflected in the condition of the medical college; it possesses an ordinary, ill-smelling dissecting-room and a single utterly wretched laboratory for pathology, bacteriology, and histology.

"A microscope is provided for each student.

"Though the same laboratory serves for the provincial board of health, no animals are used.

"There is no museum worthy of the name, and no laboratory work in physiology or pharmacology.

"The laboratory sciences have been starved that small dividends might be paid to generally prosperous practitioners."

The so-called report concludes thus:

"The question may fairly be asked: what is the value of the Dalhousie degree in medicine, won by students whose opportunities have been provided by Halifax Medical College? The connexion is, from the standpoint of Dalhousie University, highly objectionable."

At page 36 of the bulletin, the Halifax Medical College is grouped with a number of institutions of which it is said: "It is indeed stretching terms to speak of laboratory teaching in connexion with them at all."

On page 88, we read: "Elsewhere, dissecting-rooms are indeed found, but the conditions in them defy description. The smell is intolerable; the cadavers now putrid, as at Temple University (Philadelphia), the Philadelphia College of Osteopathy, the Halifax Medical College, and

in many of the Southern Schools, including Vanderbilt; again dry as tanned leather,—at the University of Tennessee, &c."

At page 139, the report, referring to the Halifax Medical College, speaks of the "disgraceful condition of the premises."

At page 325, Laval and Halifax Medical College are characterized as "feeble"; and at page 326, the Halifax Medical College is given notice to get off the map as follows:

"At this moment the needs of the Dominion could be met by the four better English schools and the Laval department at Quebec. Toronto has practically reached the limit of efficiency in point of size; McGill and Manitoba are capable of considerable expansion. The future of Kingston is at least doubtful."

With this summing up, it will be noted that Laval at Montreal; the Western at London, Ontario; the Halifax Medical College, and possibly Kingston, are consigned to the scrap heap. According to the report they "have no present function."

The parts of the report not included in this summary deal fairly enough with the Halifax Medical College and therefore do not cast discredit upon it. But you will agree with me that the parts I have quoted would, if true and well-founded, constitute a severe indictment of the Halifax Medical College, and that in any case they call for the earnest consideration, not only of the College itself, but also of Dalhousie University, of the Provincial Medical Board, of the Medical Society of Nova Scotia, of the Provincial Board of Health, and, through that last body, of the Provincial Government of Nova Scotia.

But to answer all these grave charges against the Halifax Medical College is, I am glad to say a comparatively easy matter. All that is necessary is to get the facts.

And here let me state that in proceding to answer these charges, as I now propose, I have not been commissioned or instructed by the Medical College so to do. I did indeed inform the Executive of the College of my intention to address the Society on this subject, and may be considered to have the consent of that body to do so; but what I have to present is entirely my own independent, personal view of this matter, based on an intimate personal knowledge of the College throughout its history and a full understanding of all the questions involved.

For such a task, it may, perhaps, be allowed that I have some needed qualifications. For some forty years I have been familiar with the affairs and work of the College and with the officers and teachers therein. For thirty-five years I have been one of the teachers, and it now happens that of all the present professors I am the senior in years of service.

Some further qualification may also, perhaps, be allowed me, when I come to speak of laboratories and laboratory teaching, seeing that some time ago I spent eight months in the laboratories of the Medical Department of the Johns Hopkins University, and should therefore know something as to what laboratories and laboratory teaching should be.

Now, I think we shall be the better able to weigh and appreciate this Carnegie Foundation report and the serious charges therein contained, if we inquire somewhat in detail into the circumstances and manner in which that report was obtained or arrived at.

Two delegates, Mr. Abraham Flexner, of New York, and another gentleman, Dr. N. P. Colwell, of Chicago, were sent by the Foundation to visit the Halifax Medical College and report upon it.

All the circumstances connected with their visit happened to prove very unfortunate for the success of their mission, that is, assuming that their mission was to gather up all material and relevant facts bearing upon the subject of medical education at Halifax, and to present an accurate and just report.

In September, 1909, President Pritchett of the Foundation, sent a letter to Halifax intimating that a visit of delegates was contemplated, but stating no definite date for the visit.

It so happened that when, about the middle of the following month, the delegates arrived suddenly and unexpectedly in Halifax, Dr. L. M. Murray, the Pathologist, and the Secretary of the Halifax Medical College, was absent in Montreal, and no officer of that College ever saw the delegates, or even knew of their arrival in Halifax until after they were gone.

When the delegates arrived in Halifax it was after a certain midnight, in fact about one o'clock of a Saturday morning—the day as you all know which is an off-day ,or at best only a half-day, in Halifax.

The following morning President Forrest, of Dalhousie University, was informed of the arrival of Mr. Flexner and Dr. Colwell, the delegates, at the Halifax Hotel, and he with Dr. Lindsay, Secretary of the Medical Faculty of Dalhousie, promptly called upon them at the hotel.

Mr. Flexner asked such questions as he thought proper, which were duly answered.

The delegates, who were determined to leave the city by an early train that afternoon, then paid flying visits to Dalhousie University, the Halifax Medical College, the Victoria General Hospital, and the Halifax Dispensary.

The whole rush performance was enacted in about four hours, and the delegates departed, apparently assuming that they "knew it all," though

they had not consulted with a single officer of the Halifax Medical College, though they had inspected only a portion of its equipment, though their visits to the Dispensary and the Victoria General Hospital (entirely witout tse knowledge of the Superintendent) was entirely too brief and cursory to obtain correct knowledge of their work and of their teaching facilities available for the College and its students, and though their inspection and enquiries were prosecuted with such haste that they appear to have been unable to take away with them any clear and accurate understanding of even what President Forrest and Dr. Lindsay had told them.

President Pritchett, in his introduction to the bulletin, apparently having in view such rush inspections as that made at Halifax, and anticipating objections thereto, has asserted by way of defence to his methods, "a trained observer can quickly grasp the spirit, ideals and 'facilities of a professional or technical school.'"

It is regrettable to have to state that his delegates who visited Halifax have displayed no such wonderful perspicacity.

In the draft report prepared by the delegates or Foundation, and sent, in February, 1910, to President Forrest, of Dalhousie, for "comment," as the letter accompanying it stated, there were, among other grave inaccuracies, such astounding misstatements as the following:

1. That in Medicine Dalhousie University is the *licensing authority* for the Province.

2. That Dalhousie University subjects the students of the Halifax Medical College to only *a single* examination.

3. That one-half the members of the Medical Faculty of Dalhousie University are members of the faculty of the Halifax Medical School.

4. That three-fourths of the "total income" of the College are distributed among the instructors.

5. That there is no museum and no laboratory in the school.

6. That the two hundred free beds at the Victoria General Hospital are *not* all open to the Medical School.

7. That the students are *supposed* to attend the City dispensary.

Every one of these statements is, as you all know, entirely opposed to the facts.

(1). *Not* Dalhousie, but the Provincial Medical Board is the licensing authority.

(2). Dalhousie subjects the students of Halifax Cedical College *not* to a "single examination" at the close of the medical course," but to a strict examination at the close of *each year* of the course, which since 1908 has been extended to five years.

(3). The Medical Faculty of Dalhousie is not largely made up from the Faculty of the Medical College, but the two are quite independent, and in personnel quite different.

(4). Instead of three-fourths of the "total income," only about forty per cent. of the *fees alone,* have been distributed among the teachers of the College throughout its history.

(5). Ther are both a museum and a library; the museum is small but suitable and useful, and the library is valuable, consisting of over 3,000 volumes, and is constantly being increased by the addition each year of $200 worth of the latest books, bought with the income from the Cogswell Fund.

(6). The 200 free beds at the Victoria General Hospital are *all open* to the Medical College, and the clinical teaching is extensive, and, with the small classes in attendance, is very thorough and effective.

(7). The students are not merely *supposed* to attend the City Dispensary, but they are *required* to attend there, and do attend, and in connexion with that institution, though despised by the delegates as "small," receive valuable teaching and are afforded opportunities for good practical work.

It is certainly very remarkable that two experts, certified to be able to learn all about the spirit and ideals of an institution at a glance, should have drawn up a report containing so many inaccuracies; but it all goes to illustrate what I have already said about the hurried and utterly inadequate character of the visit of inspection.

Perhaps, moreover, some of you will also note that the errors are all on one side, all tend one way, all go to the making out of a case against the teaching of the Medical College and against the value of a Medical diploma or license granted in Halifax.

So glaring were these errors that, after the "comments" sent back from Halifax, these particular misstatements were eliminated and do not appear in the report as published on pages 320 and 321 of the bulletin.

So far no harm was done; but there were other grave errors and omissions in the draft report, for which the Halifax "Comments" supplied considerable material for facts for correction.

These "comments" and acts, however, the Foundation saw fit to ignore, and so stuck to their errors and consequent misrepresentation.

For example, the draft report had disposed of the whole subject of pactical Anatomy thus:

"The Medical College possesses an ordinary, ill-smelling dissecting-room."

The Halifax "comment" corrected the false and misleading statement as follows:

"In the Halifax Medical College there is an ordinary, well-lighted dissecting room.

"There is an ample supply of material for dissections and for the operative surgery class, the result of a very satisfactory Provincial Anatomy Act.

"Formalin with Arsenic and Glycerine are used as preservatives.

"There is an appointed time (2 hours) each day for dissecting, during all of which the professor and his assistant are present aiding students or examining them on their work.

"Every student is supplied, free of expense, with a set of bones for use at home."

The Halifax statement of facts shows that in the Halifax Medical College, most ample attention is devoted to the important subject of Anatomy.

The Foundations's report of the matter would make it appear that the teaching of Anatomy at the Halifax Medical College is mere make-believe and disgraceful.

The truth is that the subject of Anatomy is taught at the Halifax Medical College in a manner that will compare favourably with the teaching in any of the best schools in America.

It is true the College has no expensive refrigerator plant, but it uses proper means for the preservation of the dissecting material.

But every point of the Halifax statement of facts regarding Anatomy, the Foundation deliberately ignored, and adhered to their meagre, "ill-smelling," and misleading statement.

The Foundation even go beyond the "ill-smelling dissecting-room" phrase of their draft report, and, at page 88 of the bulletin, charge the Halifax Medical College with having "putrid cadavers."

That all such statements in this bulletin regarding the Halifax Medical College are absolutely without any justification in fact, can be vouched for, and is ouched for, by many Halifax men who are quite as trustworthy and reliable as any connected with the Carnegie Foundation (or any other body).

And here I may call your attention to a significant little incident.

You will recollect that it was noted in the Halifax statement regarding Anatomy at the Halifax Medical College, that "Every student is supplied, free of expense, with a set of bones for use at home."

This fact with all the rest of the Haliax statement, the Foundation have deliberately ignored and suppressed.

Some might suppose that this act was passed over as of small importance; but if you turn to page 83 of the bulletin, you will find that when the College is "Cornell (Ithaca)" and not the "Medical College (Halifax,)" the Foundation consider such a fact of so great importance that a very special statement of it should be made in the bulletin. Thus you will find on page 83 the following foot-note:

"At Cornell (Ithaca) a complete set of bones is given out to each student."

Thus you will see that a practise which is worthy of special note and credit in the case of Cornell (Ithaca) is only worthy to be ignored in the case of the Halifax Medical College.

Just ponder that incident for a moment, in connexion with all the other harsh stetements and determined omissions, and see what you will be forced to conclude regarding the spirit, reliability, fairness, and purpose of this Carnegie Foundation report.

When you find a critic deliberately and persistently making statements tending to the disparagement of an institution; when, at the same time, you find that critic persistently suppressing facts which would clearly tend to the credit of that institution; what conclusion do you come to regarding the "spirit and ideals" of that critic?

Do you find the spirit of truth and justice, or the spirit of prejudice and preconceived purpose?

Now, let us turn to another paragraph of the delegates' or Foundation's draft report, and the Halifax "Comment" thereon.

The draft report asserted that "three-fourths of the *total income* are distributed among the instructors."

The Halifax "Comment" admitted that three-fourths of the fees (not the total income) were *sometimes* distributed among the teachers, but it added this important statement:

"Alarger percentage may be reqiured for expenses, in fact on occasions the whole fees for the year have been surrendered by the teachers."

As a matter of fact it was by paying the teachers nothing for two full years, that the College was able to put a new wing to the building and provide the pathological laboratory and equipment.

But the Foundation utterly ignored this important statement of fact thus brought to their notice in writing. The important qualifying statement finds no place in the Foundation's report.

Why?

Perhaps you can furnish an answer.

But you will at least note that such a statement about the teachers getting no part of the fees for a year or two at a time, in order that

College needs might be the better served, would have been a complete answer to the Foundation's charge of "Commercialism," and it would also have fairly disproved the Foundation's main thesis that "The Laboratory sciences have been starved that small dividends might be paid to generally prosperous practitioners."

The whole report regarding the Halifax Medical College, from the very first line to the last, is distinctly unfair and misleading.

At the very outset the College is described as a " proprietary school."

This is misleading .. The Halifax Medical College is not a " proprietary school " at all in the sense that some of the United States schools are .

The members of the Colloge coporation hold no stock or anything of the kind, and have no individual legal claim whatever in any property or funds of the College, either as diidends or otherwise.

The Halifax Medical College is no more a " proprietary school " than is any university in the country.

arium, they do not get it, and have no legal claim for it or any sum whatever.

The small sum which the College Corporation usually distributes each year among the teachers are in no sense dividends or salaries, but are entirely analagous to the honoraria distributed among directors of banks and other corporations, and among the members of other public bodies, such as the Halifax School Board, not at all by way of dividend or salary, but merely to mark and promote regularity of attendance and attention to official duty.

If a professor or other teacher neglects to give a lecture or demonstration, he loses his honorarium for that hour.

This system has been found to work well in the business world in promoting regular attendance at meetings, and it is also found to work well in the College, and perhaps ought there, especially, to have a place, since nearly all the teachers are engaged in busy practice, and often find it by no means easy to attend to their College duties.

But still I am bound to add, what I know to be a fact, that the teachers one and all think a great deal more of their college work and of their service to medical education, than they do of the small honoraria which merely mark their regularity of attention to duty.

It now occurs to me, Gentlemen, that in giving you this little account of how this Carnegie Foundation report was manufactured or arrived at, I have incidentally given a fairly complete refutation of most of the charges urged and uttered against the Halifax Medical College.

I may here just mention another deliberate omission in the Founda-

tion's report, though it was specially called to their attention in the Halifax "Comment," namely, that the Halifax Medical College provides teaching in Psychiatry, at the Nova Scotia Hospital for the Insane, an institution of some 400 beds, which, under the present highly competent superintendent and his able predecessors, has ever been conducted on the latest and most approved methods for the care and treatment of the mentally afflicted.

Hospital improvement and expansion are going on in Halifax, and with the development of the new Children's Hospital, improved facilities will be available for teaching in Pædiatrics.

But it now still remains that I should make special reference to the bulletin's aspersions as to the College Laboratory for the teaching of Pathology, Bacteriology, and Histology.

You will recollect that the bulletin's statement is:

"The Medical College possesses a single utterly wretched laboratory for pathology, bacteriology, and histology."

And this phrase, "utterly wretched," is used with reference to this laboratory several times throughout this libellous volume.

The words of the delegates' report might be understood to indicate that they considered it highly objectionable that a single room should be used for the three kinds of laboratory work, but, of course, as you know, there is no objection to a single room, provided it is large enough and has sufficient equipment to accommodate the several classes of students that there work at the several branches.

The laboratory was designed and equipped for routine work and teaching, and so far it has proved entirely sufficient to meet the requirement and the needs of the students of the College.

The classes are always small, never exceeding twenty in Normal Histology, or fifteen in Pathology and Bacteriology.

There are four teachers, two for Normal Histology, and two for Pathology and Bacteriology, one of the latter being also the Provincial Pathologist.

A new wing of the College building was specially designed and built to provide this laboratory. The cost of building and equipment was about $5,000, mainly provided through the teachers receiving no part of the fees whatever for two years in succession.

This laboratory room is 40 feet long, 24 feet wide, and 13 feet in height. It is lighted from three sides by seventeen windows, each three feet by eight feet, with those on the South and East sides obscured so as to avoid glare. The light throughout the room is excellent.

The room is hot-water heated, electric-lighted, and well ventilated.

Plain tables are fixed round the sides of the room, and afford liberal working space for thirty students at once, or half as many again as the largest class that so far has ever been in attendance.

Such is an accurate description of the "single room" which the delegates describe as "utterly wretched."

The equipment of the laboratory cost $2,000; and it is all comparatively new and in good order. This equipment includes twenty-seven students' microscopes, and also four high-class instruments for bacteriological work.

While the supply of instruments known as students' microscopes has been more than sufficient for any class up to date, yet the College's own supply of high-class microscopes is rather limited; but the professors have regularly been in the habit of supplying the shortage by lending their own instruments, so that each student has always had a suitable microscope for his work. When the classes increase the College will, of course, have to provide itself with more high-class microscopes.

There are also five microtomes of various types; an autoclave and other sterilizers; two incubators; facilities for making culture media, and all the glassware and material required for practical work.

The fact of this laboratory being used by the Provincial Bacteriologist is of great advantage to the College and its students, because it affords at all times an ample supply of varied and suitable material for pathological and bacteriological work.

That in the public interest, however, the work of the Provincial Pathologist should be greatly extended and put on an improved basis, is a matter which, at a later stage, I shall urge upon your attention.

The College so far has not been able to provide laboratory teaching in pharmacology, in the sense in which that word is used in the delegates' report, that is, by making experiments to observe the effects of drugs on living animals.

But the College does something far more practical and useful; it gives all its students a very thorough training in Practical Pharmacy; and it does that especially for the reason that many of our practitioners in this Province have to do their own dispensing.

For this course in practical pharmacy the Foundation gives the Colledge no credit whatever, although attention was called to it in the "Comment."

As to the charge that there is no laboratory work in physiology, it is to be said that hitherto the teaching in physiology has been mainly didactic.

Two years ago, however, a move was made to provide, in some mea-

sure, for laboratory work in this subject; money was voted for the purpose, anda gentleman was chosen as teacher. It is now definitely decided that, at the next session of the College, he will actually begin this work.

Physiological Chemistry is provided for at Dalhousie.

It seems to me now, Gentlemen, and I trust it will appear the same to you, that I have already fairly covered and refuted all the serious charges against the Halifax Medical College, preferred by these distinguished, but by no means infallible, critics, and that I have also given you ample material from which to form a correct judgment as to the character, aim and spirit of this extraordinary production of the Carnegie Foundation.

That there is much in the volume of great value, which may be read with profit by medical men and educationists, I do not for a moment deny; but the evident aim of the whole work is altogether too destructive, and the methods adopted in furtherance of that aim are not characterized by sufficient regard for truth and justice.

In my opening remarks I intimated that if the charges against the Halifax Medical College were true and well-founded, the fact should call for prompt action on the part of the Provincial Medical Board and of this Society; but I think that I have shown you clearly that all the main charges are without foundation in fact.

But while it is only necessary to cite existing facts in order to refute the disparaging charges of the Carnegie Foundation delegates, it should be distinctly said that the Halifax Medical College is far from claiming perfection, or that it would not very joyfully welcome more extensive facilities for its work.

The ideals and aims of the College have always been of the highest.

When at first it was inaugurated as a Department of Dalhousie University in 1867, it was a part of a movement among the medical men of Halifax to elevate the standard of medical education in this Province.

It was felt that amendment of the Medical Acts was desirable for the elevation of that standard, but that such improved laws would be attended by some hardship to the young men of the Province, desiring to study medicine, and by some public injury through a scarcity in supply of qualified medical practitioners, unless a Medical School were opened in Halifax to save our students the greater expense of going abroad; and, indeed, at that time the most accessible schools, namely, those in the United States, were far from being all that was thought desirable, their period of study being too short and their requirements as regards preliminary education being nil.

Halifax at that time had a body of medical men of very marked ability, including Drs. Charles Tupper, A. P. Reid, A. J. Cowie, W. J. Almon, D. McN. Parker, Edward Farrell, W. B. Slayter, H Gordon, R. S. Black, Alexander Hattie, and J. R. DeWolf; and to those may be added George Lawson, Professor of Chemistry at Dalhousie, a very thorough man in both Chemistry and Botany, with extensive experience as a teacher in Edinburgh, where he was conspicuous in the introduction of laboratory methods in the study of Biology, and also in Kingston, Ontario, where he had taken part in the inauguration of the Medical Department of Queen's University.

Nearly all of these men had received more or less of their professional education in Edinburgh, London, Dublin, or Paris, and the standard which they demanded was far higher than that generally prevailing on this Continent.

It was to promote such a progressive aim in medical education, and it was through the enthusiasm of men of such ability, training and ideals, that the Medical School at Halifax took its rise, and that school has never yet departed from the high ideals which attended its birth.

From the reorganization of Dalhousie onward, the establishment of a medical school at Halifax was constantly engaging the attention of the profession, and the man whose services proved most helpful to that end was Dr. (now Sir Charles) Tupper.

The services with which a medical man in this Provisce is most likely to credit Sir Charles Tupper are: (1) His defence of Dalhousie; (2) His advocacy of a Medical School, and (3) His reorganization of the Halifax Hospital, placing it on modern lines and a practical working basis.

Without this last item the establishment of a medical school would have been impossible.

When the question was first mooted about 1863 by the Governors of Dalhousie University the Medical Society of Nova Scotia declared it not feasible, because there was no Anatomy Act, and the clinical facilities, were insufficient.

Sir Charles was at one and the same time Provincial Secretary and President of the Medical Society, and one of the Governors of Dalhousie University, and his influence was, accordingly, very great and helpful.

In 1867 the school was inaugurated as a Department of Dalhousie University, but only as a preparatory school. This, however, was found

insufficient to meet the public needs of the Province, and accordingly the full school was organized in 1870.

The following requirements which the founders laid down for the school, prove that its educational aim was high:

(1). Compulsory Matriculation Examination in the subjects then required by the Medical Council of Great Britain.

(2). The period of medical study, after matriculation, to be extended to four years.

(3). A graded curriculum.

(4). Laboratory teaching as far as that could be made possible.

(5). A high standard for examinations, written, oral, and clinical.

That was in 1870. The ground taken by the founders of the Medical School at Halifax was in advance of that held by the Medical Schools of the United States at that date.

Every good feature adopted by the founders of the School forty years ago has been scrupulously maintained to this day. The only changes made have been in the way of progress—the Medical Course, then extended to four years, has since been extended to five years, the professional curriculum has been enlarged, the laboratory asd clinical teaching have been increased, and the professional examinations have been made even more practical asd thorough, so as to test a candidate's actual fitness for practice.

As the leading man in the organization and development of the school from 1867 to 1870, the Dean of the Faculty at that time, is with us here to-day, still hale and earty in his happy old age—I refer to Dr. A. P. Reid, and as Dr. Reid's career displays some points of considerable interest, I am sure you will allow me here a brief paragraph thereupon in passing.

Born in Ontario 76 years ago, Alexander Peter Reid graduated in Medicine from McGill in 1858; pursuing post-graduate studies in Edinburgh, London, Paris, and at the Rotunda Hospital, Dublin, he returned to Canada, and started practice in Huron County, Ontario. Shortly afterwards he undertook an expedition and crossed the Continent overland on British territory, to British Columbia. From here he passed down the Pacific coast to Oregon, and here served for a short time as a surgeon to a volunteer force in a war against the Indians. Continuing South he reached Mexico; and from Mexico found his way to New York, where he studied for a winter at New York Uniersity. Coming then to Nova Scotia, he practiced for a time in Guysboro, but soon after removed to Halifax and became the Dean of the Medical School. His subsequent career is familiar to you all, how that, successive-

ly he served most acceptably, as superintendent of the Nova Scotia Hospital, the Superintendent of Victoria General Hospital, and, lastly, as Secretary of the Provincial Board of Health, in all of which he has done valuable work for the public.

Some more special notice should be made of some others who took part in the organization of 1870; but time presses.

In 1875, for financial reasons and to secure more commodious quarters, especially for Anatomy work, the Medical School became separately incorporated as the Halifax Medical College, with degree conferring powers, and erected the new building on College Street.

The College then affiliated with the new University of Halifax, and students were at liberty to take the examination of either the College or the University. All the tudents of that period, however, took the diploma of the College; and one gentleman who took the examinations and diplomas of both, subsequently obtained degrees in Medicine and Surgery in Britain, and is now one of the leading surgeons of this Province.

In 1885, the Usiversity of Halifax, having become inoperative, the College was again drawn towards Dalhousie, but for financial reasons an open affiliation with the University could not be maintained. Dalhousie organized a full medical faculty, and undertook the teaching of the science subjects of the medical course, while the Halifax Medical College devoted itself entirely to the teaching of the strictly medical subjects. The two together *have* provided a very full and effective course of training for medical practitioners; the College having practically ceased conferring degrees, while Dalhousie has become the examining and degree-conferring body.

The present arrangement between the College and the University is working very well for all concerned, the public included; but it has its objections and just as a few years ago the McGill Medical School became an integral part of McGill University, so it is not unlikely that, before very long the Medical School at Halifax may again become an organic part of Dalhousie as it was at the beginning and should always have remained.

But of all such facts regarding the history of the College, and of its real aim and ideals, the able and expert delegates of the Foundation remained profoundly ignorant.

Another unfortunate result of the extreme brevity and hurry of their visit was that they evidently learned nothing about the constitution and practice of our Provincial Medical Board. There is, indeed, not

a single line in their report to indicate even the existence of such a Board.

Yet this body of experts and censors regard properly constituted State Boards as lying at the very foundation of a sound system of medical education, and as "the instruments through which the reconstruction of medical education will be largely affected." (see p. 167).

But if the delegates had made proper inquiry and had learned the truth, they would have discovered that the Provincial Medical Board of Nova Scotia has a constitution embodying every feature which they themselves set down as necessary and desirable.

At page 171 of the bulletin we read:

"A model state board must therefore guard the following points: the membership of the board must be drawn from the best elements of the profession, including—not, as now, prohibiting—those engaged in teaching; the board must be armed with the authority and machinery to institute practical examinations, to refuse to recognize unfit schools, and to insist upon such preliminary educational standards as the State's own educational system warrants; finally, it must be provided either by appropriation or by greatly increased fees with funds adequate to perform efficiently the functions for which it was created. The additional powers needed in order to deal effectively with the practice of medicine, lie outside the present discussion."

If the delegates had made due inquiry they would have found that the Provincial Medical Board of Nova Scotia possesses all the legal authority here set down as necessary to a "model board," including the "additional powers," and that, in practice, the Board exercises all its authority as to preliminary education and professional education, and further, that it uses its "additional powers" so as "to deal effectively with the practice of medicine," and to such good purpose that we have few if any unqualified practitioners, and "medical sects" are unknown in this Province.

The state boards with which the delegates are familiar are evidently of a very different character; for, at page 170 of the bulletin, we read:

"One or two of the States have latterly begun to introduce certain practical features into their examinations."

On the other hand, the professional examinations of the Provincial Medical Board of Nova Scotia are conspicuously practical—written, oral, and clinical—dealing with the subjects of the fourth and fifth years in such a way as to test thoroughly the fitness of the candidate to engage in the practice of medicine.

If the delegates had duly inquired into the constitution and practice

of the Provincial Medical Board they would have found that Medical Education in Nova Scotia is on a perfectly sound and safe basis.

In concluding this part of my subject let me call your attention to the fact that, so thoroughly satisfactory is the Nova Scotia system of Medical Education, the General Medical Council of the United Kingdom has agreed to Reciprocity in Registration between this Province and Great Britain.

The requisite acts of Parliament having been previously passed, the General Medical Council, in May, 1907, adopted a resolution to the following effect—the exact phrasing being somewhat abbreviated:

"That any person who holds the degrees of Doctor of Medicine and Master of Surgery of the Dalhousie University, or of the Halifax Medical College, or who holds the Diploma granted after examination by the Provincial Medical Board, and is at the same time duly registered in the Medical Register of Nova Scotia, shall be entitled to be registered in the Colonial List of the British Medical Register, and shall thereby become equally entitled to the same privileges as persons registered in the regular Home Register."

This includes the right to practice in Britain and in certain other colonies and countries, and also gives admission to the army and other medical services.

It may not be pleasant for us to fall under the condemnation of the Carnegie Foundation delegates after a four hour visit, but we are not entirely without friends, and need not feel either cast down or dismayed.

Respecting the future of the Halifax Medical College, something further, however, remains to be said.

The Carnegie Foundation has indeed moved for its prompt abolition, but I do not suppose than any person in this Province would think, for a moment, of seconding such a motion, unless, indeed, merely for the purpose of giving formality to a discussion.

In any such possible discussion I would briefly note the following points:

(1) The territory to be specially served by the Halifax Medical College comprises the three Maritime Provinces of Canada and the Island of Newfoundland—a region of far greater area than that of all the New England States, and with a population of avout one million and a quarter, or about one-sixth the population of the Dominion; and in this region the present proportion of medical practitioners is one to about twelve hundred.

(2). The Carnegie Foundation itself recognizes the desirability of

local Medical Colleges, with a view to serving the needs of special territories. At page 145 of the bulletin we read:

"A reconstruction of medical education cannot ignore the patent fact that students tend to study medicine in their own States, certainly in their own sections. In general, therefore, arrangements ought to be made, as far as conditions heretofore mentioned permit, to provide the requisite facilities within each of the characteristic State groups. There is the added advantage that local conditions are thus heeded and that the general profession is at a variety of points penetrated by educative influences."

(3). The Foundation in fact admits that Halifax is a proper place for a medical school, for at page 150, it is declared: "At some future time doubtless Dalhousie University will need to create a medical department"; yet the Foundation now absurdly asks that Dalhousie should destroy what she now has in herself and in virtual affiliation with herself, before setting about building up a new school.

(4). All the reasons that called for the inauguration of the school, in 1867 and 1870, still exist and demand its continuance.

(5). It is entirely proper, if not imperative, to consider the reputation and interests of all the 211 graduates of Dalhousie and the Halifax Medical College, now living and practising not only in Nova Scotia but in many other countries. It is indisputable that Dalhousie and the College are now better able to give a thorough medical training than ever before. If, therefore, the College should now be abolished at the instance of the Foundation, it would be a declaration to the world that the medical education heretofore provided at Halifax had been comparatively worthless—a declaration that would not only be grossly unfair to all the living graduates, but would also be positively untrue.

(6). Nova Scotian Degrees in Medicine have already attained such standing and recognition in the British world at least, that it would be sheer folly to do anything tending to jeopardize or forfeit their value.

(7). We shall more readily attain the best results in Medical Education by going on to improve what has already been accomplished by nearly half a century of faithful and intelligent effort, than we should by foolishly destroying a valuable existing institution, and then being compelled, as we should be at some future time, to start anew and build up from nothing.

And this reference to improvement brings me to the last topic upon which I propose addressing you to-day

Now, the first great improvement that is needed, not merely in the interests of Medical Education, but also and chiefly in the interests of Public Health, is the organization and establishment by the Provincial Government, of an ample, thoroughly equipped, and well-manned Pathological Insitute.

The present condition of the Laboratory used by the Provincial Pathologist is not sufficient to deal with the ever growing needs of the Public Health of the Province.

The present facilities for Clinical Pathology at the Victoria General Hospital are entirely inadequate.

The work already accomplished by the Provincial Bacteriologist at the Laboratory of the Halifax Medical College is about all that could be done with the present equipment by a man who is not so adequately paid by the Province as to be able to devote his whole time to the work; but the public needs and demands of the Province are constantly increasing.

Hence improved accommodation and equipment, with facilities for research work, are, from the point of view of the public health alone, simply indispensable.

The immediate needs are : (1) A new building specially designed and adapted for this work; (2) Ample equipment for the doing of all such work as engages attention in a modern and well-provided Pathological Institute; (3) This new institution should be presided over by a thoroughly trained and first-class pathologist, devoting his whole time and energies to the work, with an adequate salary, and with a sufficient corps of assistants.

This forward move is demanded, moreover, not only by the increasing needs of the public health, but also by the needs of the Hospitals in the various Provincial towns, and especially by the needs of the Victoria General Hospital.

Such an institution could be so utilized as to afford considerably increased facilities for laboratory work in medical education; and the Halifax Medical College has some substantial right to ask such assistance at the hands of the Government, in view of the fact that for the past ten years the laboratory of that College has really been supplying the place of such an institution for the benefit of the whole Province.

The many and varied services of the medical profession of the city and Province for the promotion of the Public Health which, as was said by Disraeli, is "The great concern of statesmen," may also well be considered to entitle them to ask some such recognition at the hands of the Government.

While the Government is now very properly doing much for Technical Education, is it not proper that it should also do something for Medical Education, and at the same time provide indispensable help for the conservation of the health of the whole Province, and especially to afford most material and greatly needed assistance in fighting the Great White Plague.

A fully equipped Pathological Laboratory, under the superintendency of a thoroughly trained man, affords most valuable assistance to the practitioner in both diagnosis and treatment; but "perhaps even more important than its services to curative, have been the suggestions of bacteriology to preventive medicine;" and preventive medicine is a matter to engage the special attention and care of goernments.

There is ample room on the Victoria Hospital grounds for such a buildings as would be required, and a first-class laboratory there would be convenient to meet the needs of both the Hospital and the Medical College.

For his highly meritorious services in conserving the Public Health and promiting Medical Education, I desire to mention the name of one man whose memory is deserving of a high tribute from both the profession and the Government—I refer to the late Dr. Edward Farrell, "a man in civic action warm," who came to an early grave through over-devotion to the public service.

When the Provincial Government establish such a Pathological Institute as I have shown to be indispensable, they will perform a graceful and proper act if they give it the name: "Farrell Pathological Laboratory."

Mr. President and Gentlemen, I have to thank you for the patient hearing you have given this rather long address.

I trust I have afforded you some assistance in measuring the value of this Carnegie Foundation report; in judging the character of the strictures against the Halifax Medical College and Medical Education at Halifax; in seeing the folly there would be in suffering such ill-founded criticism to have any destructive effect on the College; in appreciating the fact that Medical Education in Nova Scotia is on a sound and safe basis; and in recognizing the urgent need of a new and thoroughly equipped Pathological Laboratory, in the interests of Public Health, and of Medical Education.

If our work is to endure we must make it fit to endure.

Discussion.

Dr. John Stewart said: I think that Dr. Campbell's carefully prepared paper demands the serious consideration of this Society. I think

we all feel that he has shown very clearly that the estimate made of the Halifax Medical College by the Carnegie Foundation is a very unfair one, very misleading, and influenced by prejudice. To my mind the keynote to the nature of the report lies in the word "mercenary." The use of such a word in describing the founders or the teachers of the College is simply unjust and entirely uncalled for. Who, for instance, that knows him, can attribute mercenary motives to Dr. A. P. Reid, or indeed any of those who founded and fostered the College. They certainly gave more than any pecuniary return has given them.

Nothing but prejudice, or gross ignorance of the history of the College could lead to the use of so offensive a term.

The friends of the College do not think of claiming rank with the foremost medical schools; what they do claim is that the College gives a sound and efficient training in medicine, and they can justify their attitude by pointing to the many graduates of the College now practising successfully, and holding honourable positions not only in the Maritime Provinces and Newfoundland, but in Western Canada and abroad.

I believe this Society, numbering as it does many graduates of the College, has confidence in the College, and considers that it supplies a need in these Eastern Provinces.

The gentlemen who report so unfavourably on the College comment on our limited laboratory facilities. Well, we should like more apparatus, but so does every laboratory. There is always something more wanted. And it is the man more than the laboratory that makes for efficiency. There were no pathological laboratories when Lister developed antiseptic surgery; Koch, a country practitioner in a lonely Prussian village, had no laboratory but what he could construct himself. Trudeau, alone in the Adirondacks, demonstrated the main facts in our knowledge of tuberculosis.

The hospital facilities are quite sufficient for the number of the students.

I think it would be a good plan for all the graduates of the Halifax Medical College, who naturally resent this ill-informed attack on their school, and who must feel that the good character of their degree is called in question, to form a league or society to aid in the continuance and efficiency of the College.

Dr. Birt, Halifax, ventured an opinion on one point only. He thought, since he was neither a native of the province nor a graduate of the Halifax Medical College., and since his connexion with the teaching staff was so recent, that he might be assumed to be a fairly unbiased critic. His 23 years of professional life had thrown him in contact with men

holding a great variety of medical qualifications on both sides of the Atlantic—including most of the British and Canadian degrees, and those of many of the leading schools of the United States. On retrospect he did not think that, taken as a whole, the graduates of the Halifax Medical College suffered in comparison with the work of men who came from wealthier or more famous seats of medical teaching. He had found them, as a rule, excellent emergency men, alert and resourceful, and well up in diagnosis and modern therapeutics. Recognizing fully that there are weaker brethren holding the degrees of *every* school, he had not found these proportionately more numerous amongst the Halifax graduates than elsewhere.

Dr. M. Chisholm, Halifax, said that opposition to the existence of a medical school in Halifax disappeared many years ago. The success of the Halifax Medical College depended upon the thorough grounding students received in the primary subjects and the excellent clinical facilities afforded by the Victoria General Hospital. The number of students was never large, and questionable methods of attracting larger numbers had never been resorted to. It would seem as if the glamour of costly buildings had blinded the eyes of the Carnegie delegates.

Dr. A. J. Fuller, Yarmouth, dwelt especially upon the advantages of small schools where there was no disproportion between the number of students and the clinical facilities. He was satisfied that the Halifax Medical College had done good work and should be maintained.

Drs. Eagar, Halifax; Kennedy, New Glasgow; Webster, Yarmouth, continued the discussion.

A committee, sonsisting of Drs. Stewart, Webster, Chisholm, W. H. McDonald, and the Secretary, was appointed to prepare a minute in connexion with Dr. Campbell's paper, and later submitted the following, which was unanimously adopted:

"The Medical Society of Nova Scotia, in session at Yarmouth, July 6th and 7th, 1910, having considered Dr. Campbell's criticism of the Report of the Carnegie Foundation on the standing of the Halifax Medical College, finds that the Report is prejudiced, inaccurate and misleading.

"The Society considers that the best answer to the Report is furnished by the good standing and success of the practitioners who received their education in Halifax.

"The Society believes that the Halifax Medical College has proved its efficiency and that it serves a useful purpose in the Maritime Provinces and Newfoundland, and it strongly recommends that every effort should be made to ensure the continuance of a medical school in Halifax."

HUNTINGDON, of San Francisco. "Bone Transplantation." *Annals of Surgery, February,* 1905.

A case report in which a defect of the whole shaft of the tibia was replaced by a corresponding portion of its companion fibula.

Nichols in the Journal American Medical Association, February 3rd, 1904, is referred to as an able discussion on the subject. Nichols reported eleven cases which demonstrated how, in many instances, especially where the defects were of minor dimensions, when the periosteum was preserved, there was complete reproduction of the bone with the attainment of satisfactory results as far as weight-bearing and function were concerned. Two cases occurred where almost the entire diaphysis of the tibia, in one of which after four months almost complete regeneration had occurred, but in the second there was functional failure after several years.

No reference is made to the work of Ollier, of Lyons, on sub-periosteal resection which I think is very suggestive though written many years previously.

Huntingdon, on undertaking his case, recognized that a central segment of the fibula, firmly fixed to the tibia at both ends by bony union, would carry with it its own nutriment supply, and that this would be greatly increased by the more generous nutrition of the host. Assuming this as fact, he reasoned that the bridge of fibula thus formed would rapidly expand and in reasonable time approximate the dimensions of the larger bone, thereby insuring a satisfactory condition as regards weight-bearing. Another important factor was that the important relations of the lower extremity of the fibula were to remain undisturbed, *i.e.*, the integrity of the ankle joint would be preserved and locomotion be unimpeded.

He then cites his case of a patient, aged seven years, suffering from an extensive osteomyelitis of the tibia. The diaphysis was resected, and having in mind the reproduction by the periosteum this was sewn into a tube. After three months the wound was healed, but three months later there was still a gap about five inches in the shaft of the tibia, and the leg hung flail-like and could not be extended.

He then determined to bridge the gap with a portion of the fibula, and sawed through that bone at a point opposite the lower end of the upper tibial fragment and attached it thereto. This was easily done, and

the divided end of the fibula was firmly implanted in a cup-shaped depression in the stump of the tibia.

This operation was performed the end of January, 1903. In September, 1903, the patient walked well with the help of two lateral splints as a support to the ankle joint owing to a tendency towards eversion of the foot.

In October, in order to better establish the balance of the foot, a second operation was performed on the lower end of the fibula to the lower fragment of the tibia. This gave the solidity required, and was an excellent result. The radiogram in the article shows the fibula to have developed practically to the size of the tibia of the other leg, and the patient plays games just as other boys, the only present functional defect being the bowed leg and ¾-inch shortening.

As an object lesson, the writer would keep the leg at rest between the two operations and thus avoid the bowing of the fibula and the slight eversion of the foot.

Photographs and radiograms accompany the article.

The second article is by T. S. Stone, Boston. Annals of Surgery, October, 1907. He reports a similar case to that of the previous writer, and the first stages were carried on identically. After eleven weeks there was moderate union which was quite solid two months later. 5½ months after the first operation the patient was again operated on, and in this case the lower end of the fibula was fully exposed and then carefully split, the periosteum being first carefully incised to prevent stripping it from the bone. The two fragments were then carefully sutured into the main shaft near the former junction of the upper part of the fibula and the lower part of the tibia. The result corresponding to that of Huntington's case.

[Codman in Annals of Surgery, June, 1909.]

A report of a case almost identical with the preceding. In this case there occurred union between the lower end of the fibula and the united tibiofibular shaft, *per se*, without the second operation.

All three reports demonstrate the rapid development of the new shaft to fulfil the functional demand, and the preservation of the ankle joint allowed for the proper balance of the foot.

The previous articles, and having recently seen some of Carrel's work in the Rockfeller Institute suggested the review of some very interesting articles by Lexer, of Königsburg, on joint-ankylosing and joint-transplantation.

Three are referred to:

Lexer—Archiv. f. Klin. Chirurg. Vol. 86, part 4; Med. Klinik. Vol. XXII, 1908; Zentialblatt f. Chir., Aug. 20, 1908.

Te first is extracted as being very suggestive.

The observations were taken from a variety of cases.

1. Skull defects.
2. Facial bone defects, *i.e.*, saddle nose, etc.
3. Lower jaw defects.
4. Pseudarthrosis.
5. Ankylosing paralytic joints.
6. Long bone defects.
7. Joint transplantation.

His first work was in taking portions of bone with periosteum from bodies, the portions being boiled for 24 hours. His results were not satisfactory, resorption taking place and gradual breaking down.

His next work was transplanting portions of fresh and living bone. In these cases he removed the bone with the periosteum and carefully sutured it to correct the defect. He found that after the transplanting for a time there was fever, and some discharge from the wound, but he was not able to get any culture from the same nor establish any infective as the cause of the constitutional disturbance. Union proceeded undisturbed. In skull defects, as a result of trauma, he transplanted periosteal bone flaps from the tibial epiphysis of a freshly amputated leg. After discussing the plastic methods for correcting saddle nose and lower jaw defects, he cites a case of transplanting a large portion of the tibia to replace a portion in the tibia of a patient where resection had been performed for sarcoma. After seven months the patient was able to stand and walk well, though with care.

Three other cases where transplanting has been carried out successfully in long bones are given with the histories.

Joint Transplantation:

Two cases were operated upon for ankylosis of the knee. In one the ankylosis resulted from suppuration, the other from a healed tuberculosis. In each case the joint was resected, and when the leg was extended a defect to the extent of three finger breadths was present. A joint was then resected from a freshly amputated extremity, and this was implanted in situ. In the one case it was held in place by means of nails, in the other by means of wire. After three months union was firm and active, and passive treatment was carried out. There was no pain on walking or standing. In the first case there is free movement for 45°.

He then discusses his methods, and closing with stating the necessity, in all bone plastic work, to have fresh material for the transplanting,

and naturally the material not to be taken from any infected source. Medicinische Klinik, 1908.

The same author, the article being written previous to the above. He divides his subject into three:

1. The transplantation of a half joint.
2. The transplantation of both epiphysis with their cartilages.
3. The transplantation of the entire joint apparatus.

The last has been described above.

He has several times performed the other methods with good results. After resecting the joint or a portion of it, he inserted the new portion of a joint from a freshly amputated limb and held it in place either with nails or by means of wire. The supplying patient in two cases had senile gangrene. By means of the X-ray, and in two instances by subsequent operation, he found that the grafts had lived and the bone was firmly united to the shaft. In several patients he achieved joints with motion ranging from fair to good. He does not state actual amount of movement. The patient must be under control for a long period of time.

The experiments which he carried out on lower animals did not result in as good results as in the human.

W. G. T.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The sixteenth regular meeting of the Society was held Friday evening, May 24th, 1910, Dr. W Grant Stewart, President, in the Chair.

DISLOCATION OF SEMI-LUNAR CARTILAGE OF KNEE JOINT.

J. Alex. Hutchison, M.D.—The man is aged 24, and was admitted to the Montreal General Hospital on April 7th and discharged on the 28th. The diagnosis was dislocation of the semi-lunar cartilage of the right knee joint. The condition was brought about by playing lacrosse, and as a result of the injury, almost three years ago, he had from time to time sudden fixation of the joint, with pain, and before the leg could be straightened it had to be pulled out. The usual incision on the inner side of the joint was made and the cartilage removed carrying the point of the scissors as far back as possible. Recovery was uneventful, and the man has now perfect control of the limb and is doing a little running as he is anxious to take up lacrosse again.

STREPTOCOCCUS MUCOSUS, FROM CASES OF SUPPURATIVE OTITIS MEDIA.

H. S. Muckleston, M.D., read this case report.

H. S. Birkett, M.D.—We are indebted to Dr. Muckleston for the

trouble he has taken in collecting so interesting a group of cases as we have had here this evening. This group represents a series of cases which hitherto we have regarded as being rather sparse in literature, but here, in the space of two years, we have been able to collect no less than nine cases. It further emphasizes the importance in my mind of keeping watch on even an ordinary acute catarrhal otitis media, particularly where we find the condition limited to the posterior and upper part of the drum head. Puncturing the drum head with the idea of taking a culture should not be lost sight of, should these cases prove as numerous as they seem to be. The mastoid symptoms are certainly very insidious, and I would not wait, with the knowledge we have at the present time, for the definite mastoid symptoms which present themselves in these cases. In one fatal case in which I was interested the explanation of the mode of infection is very plausible, and I think the suggestion made by Dr. Muckleston makes is practically clear to me.

R. H. Craig, C.D.—Several very interesting cases of streptococcic infection of the middle ear and mastoid process have come under my observation during the past few months.

When the culture reveals a pure streptococcic infection, one must be on the qui-vive for intra-cranial complications. The advisability of early incision of the drum membrane in all cases of acute otitis media with bulging of the drum, cannot be too strongly emphasized.

I had occasion to operate upon a boy about fourteen years of age, who was suffering from typhoid fever associated with acute mastoiditis. He apparently made a good recovery from the typhoid and aural condition, and was discharged from the hospital. Two months later he appeared at the General Hospital suffering from double optic neuritis and all symptoms of intra-cranial involvement. Dr. Armstrong operated and found a large abscess in the temporo-sphenoidal lobe.

This case was interesting as apparently showing the late intra-cranial involvement, and the large amount of pus evacuated at the time.

I would like to ask Dr. Muckleston whether the blood was examined in his cases.

According to latest authorities, this has proven a valuable aid in the diagnosis and prognosis of such cases.

SOME FORMS OF TREATMENT ILLUSTRATED.

A. Mackenzie Forbes, M.D., read the paper of the evening. This was illustrated by various apparatus and by living cases.—

J. Alex. Hutchison, M.D.—I would like to express my appreciation of this interesting point brought before us by Dr. Forbes. I saw Dr. Goldthwaite some months ago, and he spent considerable time demon-

strating to me his X-ray plates and sketches from life, together with patients present at the time, illustrating his theory of stoop shoulder and throwing forward of the head and neck, and confirmed by the use of bismuth taken through the mouth. He applies just such an apparatus as Dr. Forbes has presented, and I saw several of his patients under treatment, one case in particular in which the first plate showed the stomach down, occupying the pelvic space.

G. A. Brown, M.D.—I have treated about 20 cases of enteroptosis and I have found that a great many of them have had long sloping waists. Thinking that some of them might be tubercular I have tested them, but failed to get any reaction. In this series of cases I cannot remember any case that had any trouble in their joints.

VICARIOUS HEMORRHAGE. HAEMATEMESIS.

W. W. Chipman, M.D., read the report of a case of this condition.

A. Lapthorn Smith, M.D.—These cases are very rare. In all my 32 years of practice I have only met with two that I was sure of. They were all hysterical old maids with small uteri and great abundance of fat. The two cases were cases of coughing up bright red frothy blood regularly every month for three or four months. I put them on treatment for increasing the flow of blood to the uterus and it was effective in both cases. One case, which I could not vouch for, was that of a girl who claimed she had a bloody sweat every month from her chest, but I never saw it. I think we must view these cases with a great deal of scrutiny because they are all hysterical.

A. C. P. Howard, M.D.—A young girl, about 14 years of age, came to my clinic at the Montreal General Hospital, with symptoms of chlorosis. The examination was negative except for quite an extensive ecchymosis into the upper and lower eyelids of one eye. The mother stated that this had occurred with the three previous menstrual periods. At that time I had never heard of vicarious menstruation into the eyelids, but upon looking up the subject in the index catalogue I was surprised to find four or five similar case reports.

Wesley Mills, M.D., said he thought such cases as the one Dr. Chipman had reported were very interesting as illustrating the law of rhythmicity of such wide application in biology and physiology. The cessation of menstruation during the winter months suggested hibernation. He had known of a few cases not unlike hibernation in animals in the human subject. In one case, that of a man, there was a sort of hibernation during the winter months. In hibernation the whole metabolism was profoundly altered, and no doubt there must be great changes in these cases of failure of menstruation during a special season of the

year. While there was no proof that the blood, in Dr. Chipman's case, came from the stomach, Dr. Mills would not absolutely on this account rule out that organ. The stomach was in a very different condition when not in functional activity, and under the peculiar conditions of this case it was not inconceivable that it ceased for the time to be a stomach in the physiological sense.

The seventeenth regular meeting of the Society was held Friday evening, June 10th, Dr. W. Grant Stewart, President, in the Chair.

PATHOLOGICAL SPECIMENS.

W. S. Baird, M.D., showed the following specimens:

1.—Spleen and glands from a case of lymphatic leukæmia.

2.—Heart and pericardium in acute plastic pericarditis.

3.—Carcinoma of the fundus of the gall bladder with metastases in the liver; clinical history indefinite, autopsy revealed condition.

4.—Stomach and liver showing carcinoma of the lesser curvature and glands with metastases in the liver.

5.—Specimens from a woman, five months pregnant, dying of condition diagnosed as eclampsia. At autopsy acute cerebro-spinal meningitis found of pneumonic origin; acute encephalitis; anomalous spleens nine; anomalous attachment of intestines,—ascending colon and small intestine having one mesentery; kidneys only showed acute hydronephrosis; nothing to account for albumin in urine.

6.—Specimens from child of ten weeks, intensely jaundiced; congenital obliteration of bile passages; pancreatic duct intact and opening into duodenum; no bile ducts.

A. C. P. Howard, M.D.—The clinical history of this case of congenital atresia of the gall-bladder and ducts was briefly as follows: The infant was separated from its mother during its first week of life on account of a maternal puerperal infection. When the mother saw her child again it was deeply jaundiced and gradually failing. She brought it to the General Hospital where an examination revealed a cachectic infant with pronounced icterus, intensely bilous urine and whitish stools,—more resembling white lead than anything else. Though there was no history of lues, a Wasserman reaction was tried, but proved negative. The cause of the icterus neonatarum was not cleared up until autopsy. This condition is rare, though in 1892 Thomson collected 50 cases from the literature.

W. S. Baird, M.D., showed for Dr. Elder a humerus from a case of recurrent carcinoma of the breast showing metastases; a cyst of the

brain which was found by chance at autopsy in a case which was found later to have had a history of epilepsy; and a case of mucous degeneration of the appendix.

J. M. Elder, M.D.—The appendix specimen looked exactly the shape and appearance of a fish's bladder, one of these cases which have been described in articles on the appendix as a cystic appendix. The man gave a history of recurrent attacks of catarrhal appendicitis, and he was sent into hospital to be operated on for this condition.

With regard to the humerus, this was a rather interesting case, and I reported it at the Toronto meeting. I have another one in the hospital now with a metastasis in the tibia associated with recurrent carcinoma. The woman from which this specimen was obtained came into hospital two years ago to have her breast operated upon; it was decided, however, by the surgeons that it was inadvisable to do anything. She then went to another hospital, and some attempt was made to remove the growth. The reason of her going into hospital at this time was that she had slipped on the floor, and we could make out that the thigh had given way, and she had a subtrochanteric fracture of the femur. Upon examining her we found that the left arm was one of these enormous brawny lymph arms which often follows recurrence of these carcinomas, and upon examining this arm we found that apparently there was a fracture of the humerus. It gave her no pain and was well splinted with the huge brawny arm, and she did not know it was fractured at all. The question arises, is there any hope of union of bone in these cases? I tried to put on some extension on the femur in this case, but on account of the empyema she could not have the foot of the bed raised, and we could not get the extension to work at all satisfactorily. However, there was good union, though malposition. We therefore came to the conclusion that when one gets spontaneous and accidental fracture in these cases that one may expect to get union. She died in hospital with a diagnosis made by myself of recurrence in the mediastinum, and at autopsy a large empyema was found. On looking up the literature I find that a great many of these cases go that way, and that most of the so-diagnosed conditions of mediastinal recurrence are really pleural empyæmas.

PANCREATITIS, ACUTE, SUB-ACUTE, AND CHRONIC RECURRING FORMS OF THE DISEASE.

E. W. Archibald, M.D., read the paper of the evening.

J. M. Elder, M.D.—I wish to congratulate Dr. Archibald and the Society upon the presentation of this most interesting paper. He has presented the case very thoroughly and very scientifically, and I am quite at one with him when he says that many cases that have been put

down to gastric irritation, acute indigestion, etc., are of this nature. I saw a case to-night in which I made a provisional diagnosis of pancreatitis, following the lines which Dr. Archibald gave some two years ago. Tenderness is a much more important symptom than pain. The first picture is that of intestinal obstruction high up. I am very glad Dr. Archibald has come round as to the usefulness of doing a cholecystostomy and draining the bile ducts. Undoubtedly, until some one is able to offer something better I think we are justified in draining the gall bladder. I would like to make the statement that until you have opened the gall bladder and got some bile I do not see very well how you can find out if obstruction is present.

A. E. Garrow, M.D.—I should also like to congratulate Dr. Archibald on the excellence of the paper which he has presented to-night, particularly with respect to the importance of attempting to recognize the latter two conditions, those of subacute pancreatitis and the chronic, and with these the recurrent forms. It seems to me that the chief difficulty lies in the recognition of these two. I do not think there is much difficulty in recognizing the fulminating forms, and particularly those associated with hæmorrhage. Personally, I have been inclined from a clinical point of view to divide the very acute forms into two types, each of which I had an opportunity of reporting to the Society this year; first, those in which the symptoms are shock and collapse and not infrequently, as in two of my cases, with a very rapid pulse, subnormal temperature, and all the symptoms of shock after colicky pain; and second, a type of acute intenseness associated with some fever and abdominal pain. The diagnosis of the other two types, the subacute and the recurrent forms, is only made when the abdomen is opened and the pancreas felt. It is quite true that in many of these cases, particularly if you see them during the acute exacerbation, that you may be able to map out with a good deal of exactness the tenderness which evidences the swollen and tender pancreas, but frequently the patient comes in towards the terminal stage of the attack, and one has got to depend very largely upon the history to corroborate the statement that the pain is apt to radiate into the left shoulder. I have looked for that symptom but have never been able to get one patient to acknowledge that as we find the pain radiating into the shoulder in an attack of cholecystitis.

The treatment of the acute attacks: It has been my fortune to meet with several of these very acute cases not associated apparently with bladder or bile duct infection, and even after opening the gall bladder and draining it the question was, what should I do with the intensely swollen and engorged pancreas, and in the last two or three cases I have

made a free incision into the lesser sac of the peritoneum, preferably between the stomach and the transverse colon and the gastro-cœlic omentum, and incised the capsule of the pancreas, carried in a large tube down to that and sutured it there so that it would not get displaced. A symptom of great importance is in opening the abdomen in these obscure cases when possibly necrotic fat is not noticed, the first symptom which will point to the trouble is the blood-stained fluid. This physical sign is not a very common one, and when one does meet with it in an exploratory operation for an acute condition, it is always well to think immediately of acute pancreatitis. I have, during the past two years, since reading an article on the use of protopin, been using it, and quite recently, this year, where there was unquestionably gall stones, and in addition definite evidence of pancreatitis the patients have developed attacks while using it. I must confess that in the treatment of the subacute and chronic forms, where the abdomen has been opened for diagnosis, I have drained the gall bladder, since both Robson and Moynhan have advanced the procedure, and it seems to me to give better results than any other treatment.

F. R. England, M.D.—I would like to ask Dr. Archibald if he has been able to locate an impacted calculus at the ampulla of Vater. Mayo Robson, several years ago, drew attention to the anatomical differences which may exist at the termination of the common bile and pancreatic ducts. He pointed out how, under certain conditions, a calculus might block the distal end of the ducts in such a way that the biliary secretion would be forced along the pancreatic duct setting up an acute pancreatitis.

If an obstructing calculus could be located in the ducts the rational surgical procedure would naturally be to cut down at the point of obstruction, opening the duodenum or otherwise, and, if possible, remove the obstruction.

A. E. Garrow, M.D.—I would like to ask Dr. Archibald if in his cases of acute and chronic pancreatitis he has noted the development of glycosuria. Robson and others have referred to the comparative frequency with which this condition appears in these cases. So far as my own experience goes I have not seen any.

E. W. Archibald, M.D.—In answer to Dr. Garrow's question, I would say that I have not found glycosuria except in one patient in whom there was probably sclerosis of the organ, not only of the parenchyma but of the islands of Langerhans. In several cases I have found culculi impacted in the ampulla of Vater, causing damming back of the bile. In one case of cancer of the pancreas it was demonstrated

that the bile had been forced back into the duct of Wirsung, causing a subacute pancreatitis. Walling off of the pancreas by gauze in the operation for acute pancreatitis is the proper procedure in the general opinion, as it may prevent to some extent a peritonitis.

DEMONSTRATION OF THE TETER APPARATUS FOR NITROUS OXIDE OXYGEN ANÆSTHESIA.

F. W. Nagle, M.D., of the Royal Victoria Hospital demonstrated this apparatus.

SARCOMA OF THE VERTEBRÆ.

Dr. Turner read the case report of this case, and called attention to the course of the condition and its resemblance to a general tubercular infection, except for the temperature chart.

A remarkable specimen was presented with the report, in which the primary tumour appeared to have been in the coccygeal region with metastases involving the left saow iliac joint, the lumbar and dorsal vertebrae and extending out along several of the ribs on each side; the periosteum in these last being alone involved.

Microscopical sections showing the condition to be alveolar sarcoma were also exhibited.

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PNEUMOCOCCUS POLY-ARTHRITIS, RESEMBLING ACUTE RHEUMATIC FEVER.

BY

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The rarity of pneumococcus arthritis is sufficient excuse for the reporting of five fatal cases followed by autopsy and corroboration made by microscopic examination. Four of the cases had a previous history of acute rheumatism, and one had chorea. In four the arthritis preceded other affections by an average period of about 6 days (cases 1, 2, 3 and 5) and in case 4 the arthritis occurred three days after the onset of pneumonia. Two of these cases (4 and 5) developed broncho-pneumonia, one lobar pneumonia (case 2), and all had acute and chronic endocarditis. The two cases (1 and 3) without pneumonia, simulated closely in their course acute rheumatic fever.

The papers by Cole (*American Medicine,* May 31, 1902), and Howard (*Johns Hopkins Hospital Bulletin,* Nov., 1903), make an extended discussion in this report unnecessary. The three cases reported by Howard brought the number to 72.

The organism isolated in the present series of cases corresponds to the pneumococcus in every respect. Those obtained in all the cases were identical, and the only points of special interest are low virulence for animals, an unusual vitality upon culture media in the case of the organisms obtained from fatal cases.

Case I.—Clinical Summary.—Rheumatic fever at seven years of age. On first day of present illness, arthritis of left ankle. 2nd day, arthritis of right foot. 3rd day, arthritis left shoulder. 5th day, acute pericarditis. 6th day, hydrothorax. 9th day, death.

M. E. D. Female, age 16. Service of Dr. Finley. Admitted October 8, 1908, complaining of pain in left shoulder and both ankles.

Personal History.—She was born in Montreal, and had always lived there. She had whooping cough and measles when a child, but never had scarlet fever, diphtheria, tonsillitis or chorea.

When seven years of age she was in the General Hospital two months

with acute rheumatic fever, involving the knees and ankle joints, but we have no record of her heart condition. At 14 years of age she was again in the hospital with rheumatic fever and pneumonia. At 15 years of age she was again two months in the hospital with rheumatism involving the left elbow and left knee, and the right ankle and right knee. On examination at this time she was found to have increased cardiac dulness. The first sound at the apex of the heart was replaced completely by a blowing systolic murmur transmitted to the axilla, and a short systolic murmur heard at the pulmonary artery. At this time she was given sodium salicylate gr. xv every four hours, after which the pain lessened and the temperature fell to normal in 48 hours, where it remained during her stay in the hospital.

During the summer, before her present admission, her feet and ankles occasionally became swollen and painful.

The present illness began on October 4, four days before admission, with an attack of pain in the left foot. On the following day this foot was better, but the right became involved and has remained so until the present. Three days later the left shoulder became very painful, even the respiratory movements causing discomfort. The pain in the above joints was of a sharp stabbing character, and only felt on movement. During this time she was nauseated, vomited several times daily, and has perspired freely at night. She did not feel feverish, but has eaten scarcely anything and has been constipated.

Present Condition.—On admission she is found to be a well-nourished girl of about stated age. She is somewhat anæmic and drowsy. She assumes the dorsal decubitus and is apparently suffering some pain. The temperature is $100\frac{2}{5}$. Pulse 112. Respiration 44.

There is some tenderness in each axilla, but no glandular enlargements can be made out.

The skin is very pale, warm and moist. The mucous membranes are pale and the lips dry.

Respiratory System.—Normal.

Circulatory System.—There is no præcordial pain, no palpitation and no dyspnœa. There is a diffuse cardiac impulse over the præcordial region. No thrill is felt. The relative cardiac dulness extends perpendicularly to the 2nd rib, and transversely at the 4th rib, 3 cm. to right and 13 cm. to left mid sternum.

At the apex the first sound is replaced by a blowing systolic murmur transmitted to the axilla.

The pulse is 112, regular, of small volume and low tension.

Locomotor System.—The left shoulder and both ankles are tender

and very painful on movement, but are neither swollen nor red. There is no loss of function in any of the joints from previous attacks.

Digestive System.—Normal.

Urine.—Sp. Grav. 1022, acid. No albumen, sugar or casts.

Blood count shows:—

Red cells	3,546,000
White cells	16,200
Hæmoglobin	70%

Diary.—October 9th, (the day following admission). The pain in the affected joints is somewhat decreased, there is anorexia and vomiting at intervals and general marked discomfort. There is severe pain in the præcordial region which came on suddenly this afternoon, and a definite to and fro friction rub is heard with maximum intensity in the 3rd left interspace 3 cm. from mid sternum.

Temperature 98-102. Pulse 116-128. Respiration 28-40.

October 10.—The joints have improved, there is no pain on movement, and no swelling or tenderness. There is, however, severe pain over the præcordium. The friction rub is louder than before. There is dullness at the base of the right lung from the 8th rib downward, with blowing breathing.

Temperature 98-100. Respiration 28-40. Pulse 112-124.

October 11.—There are signs of fluid in both pleural cavities, and the blowing breathing persists at the right base. There are, however, no friction rub or rales.

Temperature 97. Pulse 96-112. Respiration 20-40.

October 13.—She still complains of pain over præcordium. There is no change in the cardiac dullness, over all of which the friction rub is now heard. She is very weak and does not respond to stimulation.

The pulse is very feeble and of small volume, 124-140. Respiration 32-40. Temperature 98¼.

Sodium salicylate was not used at this time, but aspirin gr. x every four hours was given.

She gradually sank and died on the 9th day of the disease.

Autopsy performed 20 hours post mortem.

Anatomical Diagnosis.—Acute fibrinous pericarditis; acute and chronic endocarditis; myocarditis; chronic pleuritis; acute nephritis; passive congestion of liver and spleen.

The *Peritoneal Cavity* contains about 500 c.c. of clear fluid, otherwise normal.

Pleural Cavity.—On the left side there are about 100 c.c. of brownish coloured fluid. The apex of the left lung is adherent to the chest wall,

and the base of the right lung is adherent to the diaphragm by old fibrous bands.

Lungs.—Both organs are voluminous and crepitant throughout, and on section there is no evidence of pneumonia.

The *Pericardial Cavity* contains about 50 c.c. of brownish turbid fluid. The visceral and parietal pericardia are firmly adherent to each other by a grayish, fibrinous exudate which hangs in shreds from the separated surfaces.

Heart.—Weight 375 grms. In the anterior wall of the left ventricle there is an area 1 cm. in diameter, of a pale grayish colour and friable consistence. Elsewhere the myocardium is firm and of normal colour. The coronary arteries are normal. The aortic valve measures 5.5 cm., and on each corpus Arantii there is a small red, fibrinous vegetation about 3 mm. in diameter. The mitral valve measures 9 cm. Its cusps are considerably sclerosed and contracted, while over their edges are scattered a few small reddish vegetations.

Kidneys.—Weight 360 grms. On section they present a fairly well-marked acute nephritis.

The left shoulder joint contains a small quantity of slightly turbid fluid. The synovial membrane, however, is smooth and glistening.

Bacteriological Report.—No cultures were taken during life, but, at autopsy, cultures made from the heart's blood, the pericardium, the area of degeneration in the myocardium, and the shoulder joint revealed the organism described below

Case II.—Clinical Summary.—Three previous attacks of acute rheumatism. Present illness began with arthritis. 2nd day, lobar pneumonia. Death 10th day.

E. T. Age 16. Service of Dr. Finley.

Was admitted to the General Hospital on February 27, 1909, complaining of pain in the chest and smothering sensations.

Personal History.—She was born in Montreal, had always lived here, and was a strong healthy child until 4 years of age, when she had whooping cough. She then had measles, and this was followed by bronchitis, which persisted for several weeks. Since then she has never been really well, but was subject to "colds" which were always accompanied by thick whitish sputum. Her appetite has always been poor.

At seven years of age she was in the Royal Victoria Hospital two months with acute articular rheumatism. After leaving there she gained in weight, but has had recurring pains in the joints of the arms, hands, legs and feet ever since, and has had shortness of breath on exertion.

From July 17th, 1908, until September 1st of the same year, she was

in the General Hospital with acute articular rheumatism involving both knees and the left ankle. The relative cardiac dullness at this time was increased, with a soft systolic murmur at the apex.

From November 9 to December 12, 1908, she was again in the General Hospital, during which time the wrists, ankles, right knee and several of the metatarsal and metacarpal joints were swollen, red, tender and painful, and there was a rough, blowing systolic murmur at the apex, and occasionally a gallop rhythm could be heard.

Present Illness.—Began on February 22, 1909, with general malaise. The left ankle became swollen, red, tender and painful on movement, but she had no sore throat. On the following day she began to have pain in the chest with smothering sensations. In a day or two the ankle was better, but the pain in the chest continued until admission.

Present Condition.—Patient is a moderately nourished child. The face is rather pale and the lips somewhat cyanosed. The skin is moist and cool. The subcutaneous tissue is in moderate amount, and the muscles are small. There are a few small herpetic patches on the lips.

The post cervical glands are somewhat enlarged, but elsewhere are normal, and there are no subcutaneous fibrous nodules. The pulse is 126—regular, small volume and low tension. The præcordium is slightly bulging. The cardiac impulse is seen in the left 5th and 6th spaces 10 cm. from the mid-sternal line. The relative cardiac dullness at the 4th rib extends 2 cm. to the right and 10.5 cm. to the left of the left mid-sternal line.

The sounds at the apex are muffled, and there is a soft systolic murmur transmitted to the axilla and heard at the back. The second sound at the pulmonary cartilage is much accentuated.

Respiratory System.—There is a frequent, short, hacking cough, but very little expectoration. There is slight dilation of the alæ nasi and the breathing is rapid, 44 to the minute. The lungs are resonant anteriorly to the 6th rib on the right side and the 4th rib on the left, and here the breathing is vesicular. Posteriorly, there is dullness below the 9th rib on the left side, and occasional sub-crepitant rales can be heard at both bases. The sputum contains no tubercle bacilli.

The white cell count is 17,000.

Temperature 101⅘. Respiration 44. Pulse 120. The urine is normal.

Diary.—March 2, 1909.—The child does not appear so well. The lips and finger-nails are cyanosed. The face is pale, and the extremities are cold.

The cough persists and she occasionally expectorates a small amount of tenacious, blood-stained sputum. She has occasional spasms of severe

præcordial pain. The dullness has not increased at the base of the left lung, but fine crepitations may be heard all over the chest.

There is some œdema of the ankles.

March 4, 1909.—She is gradually becoming weaker. The face is very pale. The lips, hands and feet are blue, with œdema of the ankles. She has to sit up to breathe, and no radial pulsation can be felt.

The dullness at the base of the left lung is somewhat increased. Over this area there is a definite to and fro friction rub, and large rhonchi are heard all over the chest. The sputum is still tinged with blood, is viscid and closely resembles that in pneumonia. The liver dullness has not changed.

Temperature 98-101. Respiration 38-44. Pulse 118-120.

(Death followed shortly after the above note).

Autopsy performed 20 hours after death by Dr. MacLachlan.

Anatomical Diagnosis.—Acute and chronic endocarditis; chronic pericarditis; lobar pneumonia; chronic pleuritis; passive congestion of liver and spleen.

The *Peritoneal Cavity* contains a small amount of clear straw-coloured fluid.

Pleural Cavity.—There are a few recently formed fibrous adhesions at the base of the right lung. The lower lobe of the left lung is definitely pneumonic.

Pericardial Cavity.—The visceral and parietal pericardia are firmly adherent by a dense fibrous exudate which almost completely obliterates the sac.

Heart.—Weight 280 grms. The myocardium is slightly pale in colour and of somewhat friable consistence. The aortic valve measures 6 cm, and on its cusps are a few small recently formed vegetations. The mitral valve measures 9 cm., its cusps are considerably thickened, and engrafted on them are a few small reddish vegetations.

The coronary arteries are normal.

On opening the ankle joint in this case the amount of fluid is only sufficient to moisten a swab and, therefore, too small to determine its appearance. The synovial membranes, however, appear normal.

Bacteriological Report.—Cultures made at autopsy from the heart's blood, the pericardium and the left ankle joint revealed the pneumococcus.

Case III.—Clinical Summary.—Acute rheumatism at 13 years of age. Present illness began with arthritis. 9th day slight hydrothorax. 37th day aortic insufficiency. Death 101st day.

S. R. Female. Age 14. Service of Dr. Finley. Was admitted to

the General Hospital on December 3, 1908, complaining of pain and swelling of both knees.

Personal History.—She was born in Russia, came to the United States at 10 years of age and to Canada 4 months before admission. At thirteen she was in a New York hospital 2 weeks with acute rheumatism involving the right knee, and at this time she was told she had a weak heart. She has never had a sore throat, dyspnœa, or epistaxis. She has had an occasional cough, but no sputum, and has never noticed any swelling of her feet. The present illness began 4 days before admission with pain, slight swelling and tenderness of the right knee, loss of appetite and general feeling of malaise. She had no chill and did not perspire.

Present Condition.—Patient is a slender, moderately nourished girl of 14 years. She is bright and intelligent. The skin is pale, warm, and moist. The mucous membranes are somewhat pale and the tongue coated. The subcutaneous tissue is in moderate amount, and the muscles are of fair size.

Pulse 116. Temperature 100. Respiration 28.

Both knee joints are swollen, red, tender and painful. Fluctuation is distinctly present with well-marked riding of the patellæ. No other joints are involved.

The glands in the right axilla are enlarged and palpable, elsewhere they are normal.

Circulatory System.—The pulse is rapid, 120, regular, of small volume and low tension. There is no capillary pulsation. A diffuse cardiac impulse is seen in the 4th and 5th interspaces, the point of maximum intensity being in the 5th space 11 cm. from mid line.

The relative cardiac dullness extends 5.5 cm. to the right and 13.5 cm. to the left of the mid sternal line, and vertically, the dullness extends to the middle of the manubrium sterni.

A presystolic thrill can be definitely palpated at the apex. Here, also a rough presystolic murmur can be heard, followed by a blowing systolic murmur transmitted to the axilla and back. A gallop rhythm is heard just inside of the left nipple line in the 3rd and 4th intercostal spaces.

At the base a diastolic murmur is heard over the aortic cartilage, and transmitted for a short distance down the left side of the sternum. The pulmonary sound is much accentuated.

Urine.—Spec. Grav. 1027, neutral. Albumen present; also a few red blood cells and leucocytes.

The white cell count is 9,360.

Diary.—December 4, 1908.—The pain and tenderness in the knees

have lessened. The temperature has fallen to normal, and the gallop rhythm has almost disappeared. Salicylates have been given, gr. xv, every few hours.

December 8, 1908.—Patient still complains of pain and tenderness in both knees, but the redness and swelling have disappeared. She has a short hacking cough but no sputum. The cardiac dullness has not increased.

Temperature 98-102. Respiration 24-28. Pulse 98-120.

December 11, 1908.—The cardiac dullness extends 4 cm. to the right and 15.5 cm. to the left of the mid-sternal line. The sounds are as before. There is no dullness below the angle of the scapula on the left side; mucous rales are heard all over the chest, and over the area of dullness there are blowing breathing and fine crepitations.

Temperature 97-99. Respiration 26-28. Pulse 108-120.

January 8, 1909.—She has had occasional pain in both elbows and in the left shoulder. There is no dyspnœa. A capillary pulse is now seen in the fingers and lips, and a gallop rhythm is fairly well marked.

Temperature 97-09. Respiration 20-30. Pulse 98-112.

January 15, 1909.—Patient complains of palpitation. This morning she became suddenly blanched and the pulse ran up to 200, the attack passing off in 20 minutes.

February 15, 1909.—During the past month she has had two or three attacks of epistaxis, followed by palpitation and fear of impending death. Latterly the pulse has became feeble and somewhat irregular.

Temperature 97-98. Respiration 30-40. Pulse 100-160.

March 10, 1909.—For the past 10 days the patient has had several syncopic attacks. The pulse has been irregular and the heart sounds weak. The face has been pale, and the lips, fingers and nails cyanosed. There has been marked nausea and vomiting with anorexia.

Patient died after the above note was made. Autopsy performed 1½ hours after death by Dr. MacLachlan.

Anatomical Diagnosis.—Acute and chronic endocarditis; chronic pleuritis; pulmonary congestion; passive congestion of liver and spleen.

Peritoneal Cavity.—There are about 150 cc. of clear straw-coloured fluid, otherwise there is nothing abnormal.

Pleural Cavity.—There are about 80 cc. of slightly turbid fluid in the left side, and each lung is slightly adherent to the diaphragm by a fibrous exudate. The lungs are crepitant throughout, and although there is some congestion of the dependent parts, there is no evidence of pneumonia.

The *Pericardial Cavity* is normal.

Heart.—Weight 375 grms. Both auricles are markedly distended with

blood, the right extending up to the middle of the manubrium sterni. There is considerable hypertrophy of the ventricular walls, the left measuring 2.5 cm. and the right 1 cm. in thickness. The myocardium is of normal colour and of firm consistence. The aortic, mitral and tricuspid valves measure 8 cm., 10 cm., and 11 cm., respectively. Their cusps are considerably sclerosed, and on the former two are a few small recent vegetations. The coronary arteries are normal.

The left shoulder joint contains a small amount of very slightly turbid fluid, but the synovial membranes appear normal.

Bacteriological Report.—Cultures made at autopsy from the heart's blood and the left shoulder joint, reveal the pneumococcus described below.

Case IV.—Clinical Summary.—Growing pains from 9 to 12 years of age. At 12 years of age had chorea. The present illness began with transient hemiplegia. 3rd day, probable broncho-pneumonia. 9th day, arthritis. Death occurred on the 10th day.

G. M. Female. Age 13. Service of Dr. Finley. Was admitted to the General Hospital, March 12, 1909, complaining of pain in the right side of chest, and cough.

Personal History.—She was born in Montreal and has always lived here. At 9 years of age she had measles, and for 3 years afterwards she had "growing pains," but never had a "sore throat" or swelling of the joints.

When 12 years of age she was 10 weeks in the Montreal General Hospital with chorea.

After leaving the hospital she was well for a few months, and then began to have pains in her legs and arms. She went to bed for two weeks, after which she felt better. Later on she was again in bed three weeks with pains in the arms and legs, and for several weeks before the present illness this pain was almost continuous. She perspired profusely at night, but does not think her joints were swollen, and she had no præcordial pain.

The present illness began 5 days before admission, when the patient had a transient hemiplegia involving the left arm, the left leg and the right side of the face, lasting about one hour. During this time and the following day she had a severe headache.

Three days after the above onset, she began to have a dry harsh cough. She had a severe chill, lasting 10 minutes, followed by pain in her right side. She perspired profusely. The appetite, however, was good and the bowels regular.

Present Condition.—She is found to be a fairly well developed but

poorly nourished girl of 13 years. The skin and mucous membranes are very anæmic. She can lie comfortably only on her back.

The temperature is 103. Pulse 140. Respiration 42.

The skin is moist, and there is no eruption. The finger nails are clubbed. There is no pain, tenderness or swelling in any of the joints at present.

There are no glandular enlargements.

Circulatory System.—The pulse is rapid, 138, regular, full and bounding, but the vessel wall is soft. There is no præcordial pain and no palpitation.

The apex impulse is seen and felt in the 5th space 11.5 cm. to the left of the mid-sternal line, and the cardiac dullness extends 4 cm. to the right and 12 cm. to the left of the mid-sternal line at the 5th rib. A well-marked presystolic thrill is felt at the apex, where, on auscultation, the first sound is preceded by a rumbling noise, and is accompanied by a soft systolic murmur transmitted to the axilla. At the aortic cartilage there is a loud, rough murmur accompanying the first sound and transmitted upwards into the neck. The pulmonary second sound is accentuated.

Respiratory System.—There is dyspnœa on exertion, and a dry cough but no expectoration. The thorax is well formed, and the expansion is good. There is some pain, on coughing, in the right infraclavicular region. On percussion, the lungs are resonant throughout, and the breathing vesicular, except for a few crepitant rales over the right apex posteriorly.

The urine is normal except for slight diminution of chlorides.

The white cells count is 17,800.

Diary.—March 17, 1909.—In spite of stimulation the patient has gradually become weaker since admission. The temperature has gradually dropped from 101⅘ to 100. The pulse, which ran from 130 to 148, has been imperceptible at the wrist for the last 24 hours. Respiration 40-56. The extremities are cyanosed, and there is marked dyspnœa and orthopnœa. During the last two days she has complained of pain in her left shoulder, but there is neither redness nor swelling.

Shortly after the above note the temperature suddenly dropped to 95, followed by death.

Autopsy performed 7½ hours after death.

Anatomical Diagnosis.—Acute and chronic endocarditis; chronic pericarditis; acute nephritis; broncho-pneumonia; acute and chronic pleuritis; thrombosis and aneurysm of the right internal iliac artery; infarction of the spleen.

Peritoneal Cavity.—Normal.

Pleural Cavity.—The left side contains 500 c.c. of turbid blood-stained fluid. The right lung is adherent by a few old fibrous bands, and there is a patch of yellowish fibrinous exudate over the anterior surface of the middle lobe of the same organ.

Lungs.—The middle lobe of the right lung is but slightly crepitant, and firm nodules can be felt in its substance. On section, it is of a mottled red colour, and from the firm areas a brownish muco-pus can be expressed, containing Gram-positive encapsulated diplococci.

The *Pericardial Cavity* contains about 150 cc. of clear straw-coloured fluid. The pericardium is smooth and glistening throughout, except for a whitish roughened area 5 cm. in diameter on the anterior surface of the right ventricle near the apex, and to which are attached a few white fibrous shreds. An area corresponding to this is seen on the parietal pericardium.

Heart.—Weight 445 grms. The myocardium is of a pale red colour, but of firm consistence. The mitral valve measures 7.5 cm. It is considerably sclerosed, and to the posterior cusp is attached a whitish fibrous vegetation, almost spherical in shape, and about .5 cm. in diameter. The aortic valve measures 6 cm. On its cusps are exuberant, whitish coloured, cauliflower-like vegetations, forming an almost continuous mass about 1 cm. in diameter around the valvular orifice, and over these are scattered many small reddish coloured granular areas. The ventricular walls are considerably hypertrophied, the left measuring 2 cm. and the right .75 cm.

There is an aneurysmal dilatation of the anterior wall of the right internal iliac artery 2 x 2 x 4 cm. This is filled with lamellated clot which almost occludes the lumen of the vessel.

Spleen.—Weight 250 grms. On section, there is an area at the lower pole of the organ, about 5 cm. in diameter, grayish in colour and of very friable consistence. Elsewhere the organ is firm and of dark red colour.

Kidneys.—Weight 300 grms. The organs are slightly congested and, microscopically, the cells of the convoluted tubules contain a considerable amount of fat.

The left shoulder joint shows nothing abnormal. The small amount of fluid present is apparently clear.

Bacteriological Report.—A blood culture taken on the 7th day of her present illness, and cultures made at autopsy from the heart's blood and the left shoulder joint, revealed the pneumococcus.

No culture was made from the lung.

Case V.—Clinical Summary.—At 5 years of age she had scarlet fever.

and at 15 years acute rheumatism. Present illness began with dyspnœa and œdema. Soreness of joints about the 34th day. Apparent onset of pneumonia about the 40th day. Death 43rd day.

M. O. Age 40. Female. Service of Dr. Finley. Was admitted to the General Hospital November 19, 1909, complaining of sore throat, dyspnœa, weakness and headache.

Personal History.—She was born in Canada and had always lived here. She was married at 23 years of age, had 4 children; one died at 2 years of age, and the others soon after birth, of unknown causes. She had no miscarriages. Menstruation has always been normal. When 5 years of age she had scarlet fever, whooping cough and measles. At 15 years of age she was in bed 7 weeks with pain, redness, tenderness and swelling of both ankle joints.

The present illness began about one month before admission, with pains in her head, in her back and over the præcordium. She coughed a good deal, but had no expectoration.

For the first time now she noticed she had dyspnœa on exertion and occasionally orthopnœa, but was not confined to bed. Since the onset she has noticed that her feet were swollen at night. These symptoms gradually became more severe until admission.

Present Condition.—The patient is a moderately nourished woman. The face is pale and the cheeks somewhat cyanosed. The respiration is rapid, and there is well-marked orthopnœa.

Circulatory System.—The pulse is somewhat collapsing, but not increased in volume, and there is well-marked capillary pulsation in the lips and finger nails.

There is a forcible cardiac impulse in the 3rd, 4th and 5th left intercostal spaces. The cardiac dullness extends up under the manubrium sterni. 6.5 cm. to the right and 12 cm. to the left of the mid-sternal line at the 4th rib.

At the apex both sounds are indistinct. The first is preceded by a faint rumble and accompanied by a soft blowing murmur not transmitted to the axilla. At the base of the heart the aortic sound is partly obliterated by a soft diastolic murmur transmitted down to the left side of the sternum. Here, also, there is a soft systolic murmur, best heard on the right side of the sternum over the 3rd rib. The pulmonary sound is accentuated.

Respiratory System.—The respirations are rapid, laboured, and accompanied by dilation of the alæ nasi with contraction of the muscles of the neck.

The pulmonary resonance extends to the 4th space on the right and to

the 3rd space on the left, anteriorly. Posteriorly, there is dullness below the angle of the scapula on the right side and below the 9th rib on the left. Rhonchi are heard all over the chest, and a few coarse crepitations are heard at the bases of the lungs.

Digestive System.—The tongue is dry and coated. The abdomen is soft and not tender. The liver dullness extends from the 4th rib to the left of the umbilicus, measuring 23 cm. in the right nipple line.

The feet are cold and there is marked œdema of the ankles and legs, extending up into the thighs.

The urine shows the following:—

Sp. Gr. 1,030, acid, clear, amber. There is a trace of albumen and a few granular casts.

Blood count shows:—

Red cells	3,150,000
White cells	7,800
Hæmoglobin	67%

Temperature 99.3. Pulse 120. Respiration 24.

Diary.—November 22.—For the last three days the patient has been kept in bed and given digitalis. The dyspnœa and orthopnœa have become much less, and the œdema has decreased considerably. The circulatory and respiratory systems are the same as before. She complains of soreness of her knees and shoulder joints, but there is no redness and no swelling.

Temperature 101½. Pulse 96. Respiration 28.

November 29.—The temperature, which has been intermitting between 95 and 98 for 6 days suddenly rose yesterday to 102 where it has remained. The pulse is now 112 and the respiration 48. The dyspnœa is more marked, but there is little cyanosis of the lips, cheeks or fingers. Her mental condition is dull. Large moist rales can be heard all over the chest. A paracentesis was done yesterday in the lower axilla and 100 c.c. of blood-stained fluid withdrawn. There is no friction rub or blowing breathing. The cardiac dullness and sounds are unchanged. The spleen can just be felt under the costal border. No definite dullness can be made out in the flanks.

December 1, 1909.—The temperature has remained about 102. Respiration 64. Pulse 112. The breathing is now very laboured, with dilation of the alæ nasi and contraction of the muscles of the neck. There is dullness, blowing breathing, increased fremitus, and fine crepitations over the upper lobe of the left lung.

December 2, 1909.—Patient gradually sank since last note and died.

Autopsy performed 19 hours after death by Drs. Baird and MacLachlan.

Anatomical Diagnosis.—Cardiac hypertrophy; acute and chronic endocarditis; arterio-sclerosis; broncho-pneumonia; hydrothorax; ascites; chronic passive congestion of liver and spleen; acute septic lepto-meningitis.

Peritoneal Cavity.—There are about 150 cc. of clear straw-coloured fluid. The peritoneum is smooth and glistening. The liver almost fills the right half of the abdominal cavity, the right lobe being elongated and its lower edge lying 2.5 cm. below the right iliac crest. The lower edge of the left lobe lies 6 cm. below the costal margin.

Pleural Cavity.—There are about 350 cc. of clear straw-coloured fluid in the right side. No adhesions.

The right lung and the lower lobe of the left are crepitant throughout. On section, they are slightly congested. The upper lobe of the left lung is but slightly crepitant and is nodular. On section, it is of a dark red colour, mottled with grayish areas, having a somewhat dry, granular surface, from which plugs of thick pus can be expressed containing Gram-positive encapsulated diplococci.

Pericardial Cavity.—Normal.

Heart.—Weight 415 grms. The right auricle is distended with blood. The myocardium is of dark red colour and of firm consistence. The left ventricle shows considerable hypertrophy, measuring 1.75 cm. in thickness. The mitral valve is markedly sclerosed and measures only 6.5 cm. The aortic valve measures 5 cm. Its cusps are considerably thickened and adherent at their edges. In the right posterior cusp there is a perforation measuring .5 cm. in diameter and having ulcerated edges. On the free edges of the cusp there is a large, reddish-coloured, fibrous vegetation 1 cm. in diameter. The coronary arteries show considerable atheroma.

Spleen.—Weight 205 grms. On section, the organ is of a dark red colour and of firm consistence. The structure is easily made out.

Liver.—Weight 1,790 grms. The right lobe is elongated, measuring 27 cm. from above downwards. On section, the organ is of a dark brown colour, finely mottled with yellow, and of firm consistence. The organs of the neck, the gastro-intestinal tract, pancreas, kidneys, adrenals, bladder and genitalia show nothing abnormal. The aorta shows occasional atheromatous plaques throughout its extent.

Head.—The calvarium measures .75 cm. in thickness. The dura is considerably thickened and dense. The brain weighs 1,350 grms. Over the vertex there is considerable sub-pial œdema, and many of the sulci

contain a small amount of yellowish exudate. Over the base and especially in the region of the pons, there is a well-marked layer of greenish yellow pus. The ventricles are not distended, and there is no softening.

In this case no joints were opened..

Spinal Cord.—There are several small areas of yellowish purulent exudate in the arachnoid space similar to that in the base of the brain.

Bacteriological Report.—A blood culture taken four days before death, at the rise of temperature above stated, revealed the pneumococcus. Smears from the exudate over the brain and cord showed a Gram-positive encapsulated diplococcus, and cultures made from the heart's blood and the brain revealed the same organism.

Cultures from the pleural fluid were negative.

In reviewing the bacteriological reports we find that in only cases 4 and 5 were the organisms found in blood cultures taken before death. In all it was isolated from the heart's blood after death. In the first four cases it was found in the fluid from the last affected joint. In cases 1 and 2 it was obtained from the pericardium; in case 1 from the myocardium, and in case 5 from the exudate over the brain and cord.

In each case the procedure for making cultures was the same. In taking the blood cultures the needle was inserted into the median basilic or cephalic vein and 4 to 6 c.c. withdrawn. At the autopsies the heart's blood was obtained by inserting a sterile pipette into the seared auricle.

In all the cases flasks containing about 50 cc. of plain bouillon, inulin bouillon, and litmus milk, and tubes containing blood agar and blood serum, were inoculated with a few drops of blood. Likewise, tubes and flasks were inoculated as far as was possible, at autopsy, from the other above named sources. Morphologically, the organism isolated from these various cases is a Gram-positive, oval-shaped coccus measuring about one micron in its long diameter. It is for the most part arranged in pairs, but in fluid media it often occurs in chains of from four to ten or twelve, and in many of the primary milk cultures it has shown a well defined capsule.

In cultures the more profuse growths are obtained by the use of slightly acid or neutral culture media. There is no growth on plain agar. Gelatin is not liquified, and there is no evidence of motility. On blood agar plates it grows in small, transparent, well-defined colonies and produces a slight hæmolysis, giving the medium a somewhat greenish tint. In bouillon it produces a turbidity which settles to the bottom as a grayish sediment.

Dextrose and lactose are fermented, but not mannite or saccharose. In

litmus milk it produces acid, giving the medium a beautiful pink colour, and furthermore, it raises the acidity of inulin bouillon 2 to 3 per cent.

The organism is devitalized at 55 degrees for one hour, but cultures kept in an ice chest only require transplantation every four or five weeks, and on one occasion transplants made on blood agar from a bouillon flask standing six weeks in room temperature gave a profuse growth.

Exactly similar animal inoculations were carried out in the first four cases. Three days after the organisms were isolated, a rabbit and a guinea pig were inoculated intra-peritoneally with 2 c.c. of a turbid broth culture of 24 hours incubation. This produced no abnormal symptoms. 4 c.c. of a similar culture were then injected directly into the ear vein of a rabbit. This animal ate well, was active, and showed no evidence of articular or cardiac disturbances. The washings from six blood agar tubes were then injected into the ear vein of a fresh rabbit. In each case this animal showed a marked indisposition for two or three days and remained quiet except when forced to move in the open. The condition then began to improve, and in from eight to ten days it was almost well. Each animal was then killed, and autopsies revealed no cardiac or articular disturbances. Blood smears, however, showed a marked leucocytosis, and in three cases the organism was recovered in cultures made from the heart's blood.

Rabbits inoculated intravenously with 10 cc. from a devitalized broth culture reveal no toxic symptoms.

Three days after the organism was isolated in case 5, a rabbit was inoculated intravenously with the washings from three blood serum tubes, but this animal did not show the slightest indisposition during the following five weeks, at the end of which time it passed from under observation. A white mouse inoculated at the same time with the washings from one blood serum tube died in 24 hours, and smears from its blood showed innumerable Gram-positive encapsulated diplococci. Four other white mice inoculated with equal amounts of transplants from cultures of the first four cases did not die, but when killed, after 36 hours, the organism were recovered from the heart's blood of the animals inoculated with the cultures isolated in cases 1 and 4.

The fact that the old cultures were less pathogenic to the white mice can probably be explained by their being grown for a longer period of time on artificial culture media.

No attempt was made to raise the virulence of the organism in any case.

On reviewing the literature of acute rheumatism and chorea, there would seem to be very little doubt that the condition is bacterial in origin,

but as to whether there is a specific organism or a number of organisms which may set up the condition does not seem to be definitely settled. The organism described above corresponds very closely, morphologically and in cultural characteristics, to that described by Poynton and Paine. Their organism, however, possessed considerable virulence for rabbits.

From bacteriological observations made on the cases here reported, and on several non-fatal cases in the wards, it would appear that the disease was due to an organism of low virulence, which produces an arthritis from which it cannot easily be isolated, but that the virulence may increase so as to produce cardiac and pulmonary lesions and even death.

	Clinical History.	Temperature.	Pulse.	Respiration.	White cells.	Source of Culture.	Organism.
Case 1. Age 16 Female	Onset with polyarthritis Pericarditis on 5th day Pleuritis " 6th " Death " 9th "	96-103	112-140	32-46	16,200	Heart's blood Shoulder joint Myocardium Pericardium	Pneumococcus
Case 2. Age 16 Female	Acute rheumatism at 7, 11, and 12 years of age Present onset with arthritis Lobar pneumonia on 2nd day Endocarditis " 2nd " Death " 10th "	98-103	116-136	24-52	17,000	Heart's blood Pericardium Left ankle joint	Pneumococcus
Case 3. Age 14 Female	Acute rheumatism at 13 years Present onset with arthritis Pleurisy on 9th day Endocarditis " 37th " Death " 101st "	96-102	72-148	22-48	9,600	Heart's blood Left shoulder joint	Pneumococcus
Case 4. Age 14 Female	Growing pains in childhood Chorea at 12 years of age Present onset with hemiplegia Broncho-pneumonia 3rd day Arthritis 9th " Death 10th "	101-104	124-138	36-54	17,800	Blood culture 7th day Heart's blood Left shoulder joint	Pneumococcus
Case 5. Age 39 Female	Acute rheumatism at 15 years Present onset with dyspnoea Arthritis 34th day Broncho-pneumonia 40th " Death 43rd "	95-102	72-124	20-52	7,800	Blood culture 40th day Heart's blood Meninges.	Pneumo cus

By way of illustration, a few cases may be mentioned briefly:—

A boy, 12 years of age, admitted with well-marked chorea and endocarditis; following this he developed pericarditis, hemiplegia lasting one week, and later pleurisy with effusion. Cultures made from the pleural fluid showed Gram-positive diplococci resembling, as far as they could be cultivated, those found in the fatal cases described above, but they failed to grow on the second transplant.

In 8 out of 13 adult cases of typical acute rheumatic fever, smears made from the fluid aspirated from the affected joints revealed pus cells and occasional Gram-positive encapsulated diplococci, but no growths could be obtained in cultures made.

In the five other cases, one of which developed endocarditis, pericarditis and pleurisy, the aspirated fluid contained many pus cells, but no bacteria could be found and cultures were sterile.

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SOME THEORIES ON THE NATURE OF SHOCK.

BY

E. H. FALCONER.

Theories regarding the nature of shock have been many and various, especially during the past half century, but for the scope of this paper, only such theories are considered as have a foundation built upon experimentation.

For many years before the present era of experimental shock, the cause of shock was vaguely ascribed to the severe shaking up or commotion of the vital processes. For example, Erichsen, in 1864, considered shock, especially in accidents, to be due to the "sharp vibration that is transmitted through everything." It is, however, worthy of note that as early as 1864, W. W. Keen and S. Weir Mitchell put forth practically the same theory as that advanced by Crile, of Cleveland, at the present day, namely, that shock was due to vasomotor fatigue.

The era of experimentation might properly be said to have begun about 1870. It was in this year that Golz, of Strassburg, began his classical experiments on frogs. His findings, of interest to us in this paper, were briefly these: When a frog is suspended, with legs downwards, and

sharply tapped on the abdomen with the handle of a scalpel, the heart is suddenly arrested; after a short time it resumes its beat but is paler, and less blood is thrown out at each contraction, and the blood is seen to collect in the splanchnic area. On placing the frog in the horizontal position the heart soon acquires its normal colour and the normal amount of blood again passes through it. This experiment furnished a foundation for much experimental work, and its principle is embodied in a widely accepted, present-day theory.

Fischer, interpreting Golz's experiments, advanced the theory that shock was a vaso-motor paralysis of the splanchnic area, with the result that most of the blood of the body accumulated there. Briefly put: Shock was a hæmorrhage into the great veins of the body. To Fischer the vascular disturbance was primary, the secondary disturbances being accounted for by anæmia of the parts outside the splanchnic area. Fischer, writing on shock nearly forty years ago, cites a concrete case of shock which gives a very clear and definite clinical picture: "A strong and perfectly healthy young man was struck in the abdomen by the pole of a carriage drawn by runaway horses. No recognizable injury was done to any internal organs, nevertheless grave symptoms made their appearance immediately after the accident. The injured man was lying perfectly quiet and paid no attention to anything going on around him. His face was drawn and peculiarly elongated, the forehead wrinkled, and the nostrils dilated. His weary, lustreless eyes were deeply sunk in their sockets, half covered by the drooping eyelids. The pupils were dilated and reacted sluggishly to light. The eyes had a glassy and vacant expression. The skin and mucous membrane had a glossy and marble-like pallor; large drops of sweat hung on eyebrows and forehead. The rectal temperature was subnormal; the sensibility of the entire body was greatly reduced; the patient reacted slightly and only to very painful impressions. No spontaneous movements of any sort were made by the patient. On repeated and urgent requests he showed that he could execute limited brief movements; the sphincters were intact, the urine obtained by catheter was scanty and concentrated, but otherwise normal. The almost imperceptible pulse was rapid, irregular and unequal. The arteries were narrow and of low tension. The patient answered questions slowly and only after repeated questioning. His voice was hoarse and weak. On being repeatedly questioned he complained of cold, faintness, and deadness of all parts of the body. The respirations appeared irregular, and when he shut his eyes he felt nauseated and dizzy."

This syndrome is that of a case of traumatic shock, but it fits very well those cases of surgical shock, excepting that the latter is more slowly

developed. To many minds shock has come to be associated in a restrictive manner with surgical shock alone. This is no doubt due largely to the labours of Crile in directing attention to the nature and prevention of surgical shock.

Working along the lines suggested by Golz's experiments on frogs that the vascular phenomenon is the primary cause of shock, Crile has attempted by careful and extensive experimentation to solve the problem of surgical shock. His experiments have been carried out principally on dogs. Blood pressure was, in each experiment, carefully noted with mercury, and sometimes, both mercury and water manometers. Various procedures for reducing the animal to shock were resorted to, as, laparotomy, crushing and tearing of various organs and members, extensive dissection of skin and tissues, pulling and tearing of viscera and peritoneum, removal of portions of the brain, burns, and gun-shot wounds. In most of these procedures there was noted a preliminary rise in blood pressure, but continued manipulation was followed by gradual decline of blood pressure and, in proportion to the rapidity and amount of fall of blood pressure, the different stages of shock appeared. Usually in advanced shock stimulation of an afferent nerve, such as the sciatic, resulted in no vaso-motor response. Procedures such as section of the spermatic cord, crushing or mechanical violence to the testicles and ovaries, resulted in a fall of blood pressure from the beginning.

Crile's conclusions are essentially as follows: Mixed nerves contain pressor and depressor fibres; stimulation normally calls into effect pressor action and blood pressure is raised. Continued and especially severe stimulation exhausts the pressor effects and the depressor action is called into effect with a consequent fall of blood pressure. The depth of shock is in proportion to the failure of the pressor action. This places the failure of blood pressure as the principal cause of shock, and this failure of blood pressure has as its cause vaso-motor exhaustion. Cardiac and respiratory failure are factors in the causation of shock, but are only of secondary consequence.

As a support to his contention of vaso-motor exhaustion, Crile has shown that if the afferent nerve paths from the field of operation are blocked by cocaine, and severe afferent impulses thus prevented from passing centripetally, the vaso-motor centre continues to function well and blood pressure is maintained. Adrenalin will provide a temporary pressor mechanism by contracting the muscle in the walls of the blood vessels. Also transfusion of blood and peripheral pressure, maintained by means of a pneumatic suit encasing the patient, will raise blood pressure by hydraulic principles; such rise is only temporary, where shock

has proceeded far, and will not be long sustained on account of the complete exhaustion of the vaso-motor centre.

In a set of recently published experiments, Crile claims to have found constant alterations present in shock, in the perkinje cells in the cerebella of dogs. He observed an initial increase in the extra- and intranuclear chromatic material of the Nissl substance. This increase was followed by a progressive decrease and final disappearance. There were also present structural changes in the cell. "The cytoplasm became œdematous and vacuolated, leading to general disintegration of the reticulum, in which degeneration the nucleus shares."

An important phase in Crile's work is that he makes the following distinction between shock and the allied phenomenon, collapse. The onset of shock is gradual, and of vaso-motor origin primarily. Collapse has a sudden onset and may have its origin in cardiac, respiratory or vaso-motor inhibition of function. In shock the vaso-motor centre is exhausted and stimulants simply hasten the end. In collapse the centre is "functionally depressed," and stimulants are indicated. The necessity of carefully distinguishing between the two conditions is only too obvious.

Porter does not accept Crile's conclusions, and states that an analysis of 765 blood pressure records, taken from stimulation of the sciatic, brachial and depressor nerves of different animals, shows "that the percentage change in blood pressure, which is the true index of the condition of the vaso-motor cells, increases as the blood pressure falls." Where all the clinical signs of shock were present, blood pressure low, temperature sub-normal, heart beat weak and irregular, and the irritability of the nervous system much reduced, stimulation of the depressor nerve lowered blood pressure 45 per cent. This data, he says, shows pretty conclusively that the vaso-motor cells in shock are neither exhausted, inhibited nor depressed. In explanation of Crile's findings on blood pressure, Porter says: "Exposure of the intestines inevitably dilates the blood vessels in the largest vascular area in the body. The general blood pressure thereupon necessarily falls. Primarily, this is simply an hydrostatic phenomenon identical with the fall in arterial pressure produced in a rubber and glass model of the circulation, by lessening the peripheral resistance." He further points out that removal of large portions of skin acts in the same manner by dilatation of the vessels in the area with a consequent fall in the general pressure. "The escape of blood from the arterial and their capillary terminals either outside the body or into the veins produces not merely an hydrostatic fall in the general blood pressure, but if the dislocation be excessive, deprives the bulbar cells of oxygen by removing large quantities of hæmoglobin."

This brings us to the consideration of another theory where, instead of oxygen starvation too much oxygen or fresh air, replacing the CO_2 of the tissues, contributes markedly to the condition of shock. This theory is propounded by Henderson, of Yale, who believes that acapnia, which means diminished CO_2 content of the blood and tissues, is an important factor in the production of shock. His conclusion, drawn from experiments on dogs, may be summarized as follows: There is accumulating evidence that CO_2 acts as a hormone and the CO_2 content of the blood, if diminished, affects the heart, respiration, nervous system, and circulation. Sudden or relatively great diminution in the CO_2 content of the arterial blood, probably by affecting centres in the medulla, increased the heart rate up to the point of cardiac tetanus, and death resulted. Less sudden diminution, either by hypernœa (the effect of administration of an anæsthetic, or severe afferent impulses), or exhalation of CO_2 from exposed viscera, in operations, may produce the condition of surgical shock. He points out that even voluntary rapid respirations, by altering the CO_2 content of the lungs, will give rise to very rapid heart beats with fall of blood pressure. Experiments are now under way to determine the value of CO_2 inhalations in shock, and of intravenous salines saturated with CO_2. To Henderson, the control of the heart is control of the situation in shock. By regulating the rate of pulmonary ventilation he reduced the heart beat, approximately from 155 to 30; in fact, he adjusted the heart beat to any desired rate. As long as the heart beat was slow, or moderate, shock was held in abeyance.

Howell regards the heart as an important factor in shock, but he distinguishes two forms of shock, cardiac and vascular. In some of his experiments he noted the pulse was very rapid and weak, while the blood pressure was fairly well maintained. In other experiments the blood pressure dropped to 40 or 20 millimeters of mercury. The pulse in these cases was greatly accelerated. He concludes that cardiac shock may occur without the fall in blood pressure, but vascular shock is always accompanied by cardiac failure. Howell considers that there is no evidence of exhaustion of the cardio-inhibitory or vaso-motor centres, as there were no signs of a preceding over-excitation. He assigns the cause to an inhibition of the tonus of the vagus, which causes acceleration of the heart and an inhibition of the vaso-motor centres leading to vascular shock.

Another very able exponent of inhibition as the cause of shock, is S J. Meltzer, whose views, however, do not entirely coincide with those of Howell. Meltzer has formulated a theory which takes into account those

cases of sudden traumatic shock as well as surgical shock. He believes that accidental injuries, violent mechanical agitation of sensitive parts, laparotomies, burns, and extensive destruction of tissue react on the nervous system as a whole, not on a few centres, "producing a marked tendency towards inhibition of functions." He cites as an example, opening the abdominal cavity, with extensive exposure of viscera, resulting in insensibility of the viscera, general insensibility and apathy, and general muscular weakness. If rough handling of the viscera is kept up varying degrees of shock appear, according to the resistance of the subject; ultimately complete shock develops. The vital processes are involved, but in varying degrees and not in the same order. Sometimes the heart is primarily involved, at other times the respiratory or vascular systems are the first to fail. To quote from one of Meltzer's articles: "The assumption that the insufficient activity of several functions during shock is due to a preponderating inhibitory influence refers only to the primary effect. It seems to me self-evident that during the course of shock other influences must become secondarily active. The insufficient activity of one function becomes detrimental to the other, and anæmia, asphyxia, and even fatigue or other conditions, might become operative during the course of shock."

Lemon, writing in the *Yale Medical Journal,* agrees with Meltzer's views regarding shock as a reflex inhibition of the nervous system, but he makes a point of the fact that shock, of the milder types, has, seemingly, escaped attention. He draws a clinical picture of a case of shock of a type which usually goes unrecognized: "A man of middle age and nervous temperament has been thrown violently to the floor, in a collision of cars. There is no demonstrable physical injury; the patient assures us that he is not injured, and seems anxious to get away from the scene of the accident. He talks rapidly, is in a very affable mood, and congratulates himself on his escape. We follow that man to his home, and an hour later a different picture presents itself. The man is quiet, the exaltation of mind has disappeared, the pulse is rapid, and he is overtaken by a feeling of fatigue. Reaction begins, he becomes conscious of pain at various parts of his body: he is nauseated; the extremities are cold, though not bathed in perspiration. If the accident has followed shortly after the ingestion of a meal, he vomits. Six hours later there is a slight rise of temperature, and the patient has a restless night. The following day the tongue is coated, there is headache, the face is flushed and may appear swollen; there is complete loss of appetite, pain in the small of the back. The patient is irritable, he is anxious about his business affairs, and almost without exception his bowels fail

to move. The assurance of the previous day that he was not injured gives place to a despondent fear that he is seriously injured and that his condition will become progressively worse." Lemon explains the condition just recounted as due to a reflex inhibition of the nervous system, causing not only vaso-motor and heart disturbances, but arrest of function of the physiological processes taking place in the body. He adds that in no other way could one explain the nausea, restlessness, muscular soreness, disordered digestion, pains and prostration, following a comparatively trivial injury.

Bainbridge and Parkinson, in England, at two autopsies for post-operative shock, noted the absence of chromoffin tissue in the suprarenal glands. This opens up a new field for experimental shock and suggests an interesting possibility as a help in solving the true nature of shock. Schur and Weisel, working in Germany, have noted the same loss of chromoffin tissue in the suprarenals, but attribute it to the administration of volatile anæsthetics.

In summing up the status of shock at present, as evolved from the various experimental findings, Crile's work and conclusions cannot fail to appeal to one, from a practical standpoint. His conclusions have all been tested in his extensive surgical practice. His pneumatic suit, which by various degrees of inflation, maintains the peripheral pressure by mechanical means, when the true vaso-motor mechanism gives way, has tided many patients over a dangerous crisis. Transfusion of blood he regards as almost a specific in preventing shock in patients, who, otherwise, would be "very poor surgical risks."

Porter's conclusions are entirely opposed to Crile's findings. His experimental evidence, in support of his contention that the vaso-motor cells are not exhausted in shock, is very strong. His vast experience in research work would presuppose a correct interpretation of his results, yet, withal, his conclusions do not seem to have led to the formation of a theory as to the true cause of shock, nor to any methods for the prevention of shock.

Henderson's theory of acopnia, or diminished CO_2 content of the tissues as a factor in shock, does not attempt to controvert any experimental findings so far published. The theory simply suggests that the possibility of many factors contributing to the condition known as shock, and it seems to have opened up new territory properly belonging to the domain of shock.

We have covered in a brief manner most of the present-day theories on shock that have as a basis experimental evidence. Certainly, the sign posts do not all point in the same direction, and some of the conclusions

would seem rather to lead us afield than otherwise. However, many of the experimental findings agree with clinical observations, and such evidence must be regarded as of the highest worth. Meltzer fixed the status of shock pretty well when he said: "The bringing forward of new experimental facts capable of shedding some more light on our puzzling problem is not yet a superfluous luxury."

ACCIDENTAL DIVISION OF URETER WITH END-TO-END ANASTOMOSIS.

BY

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Mrs. H., aged 28, was referred to me by Dr. Foss, of Black Lake, September, 1909, for operation.

On opening the abdomen there presented a large multilocular cyst, the size of a fœtal head, situated between the layers of the broad ligament on the right side. There were extensive adhesions to the pelvic brim and surrounding structures. The cæcum was freed by the removal of the appendix. A considerable portion of the ileum was detached from the mass by leaving a portion of the cyst well attached to the bowel. In the attempt to free the adhesions from the pelvic brim, with round pointed scissors, the ureter was divided completely. This was at a point one inch internal to its natural course. It was firmly adherent to the thick cyst wall. The ureter was dissected back for ⅜ of an inch in each direction, then tension sutures placed in the masses on either side, and drawn up, thus relieving all strain on the ureter. An end-to-end anastomosis was then done, using two interrupted sutures of fine silk on either side of the ureter, which was held by my assistant, while a fine continuous suture of the same material was lightly applied around the line of division passing through all the coats except the mucosa.

The patient made an uneventful recovery, and has had absolutely no trouble referable to the pelvic or renal regions up to the present, September 10th, 1910. The point in the ureter where the division was made, and the existing complications made it impossible to do either of two other preferable procedures, viz., implantation into the bladder wall or lateral ureteral implantation.

ANÆSTHESIA—THE PSYCHOLOGICAL BUGBEAR OF SURGERY.

BY

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Some years ago, whilst reading Dr. Wm. Osler's "Science and Immortality," I came across one of Oliver Wendell Holmes's many apt sayings, "We may love the mystical and talk much of the shadows, but when it comes to going out among them and laying hold of them with the hand of faith, we are not of the excursion;" and it struck me at the time that there was no better illustration of the truth of this statement than the manner in which the average individual regarded "crossing the bar" of anæsthetic oblivion. Truly, of all the intricacies of the human mind, there is, perhaps, no more interesting phase than that which comes under the observation of the anæsthetist.

Dr. Osler, in describing his five hundred death-bed scenes, states that the great majority showed no mental apprehension, in fact, "gave no sign one way or the other."

On the other hand, observations extending over thrice that number of cases for anæsthesia, justify me in making the assertion that the overwhelming majority have shown mental apprehension, and indeed, in some cases, anguish, when called upon to experience what may, in so far as the conscious mind is concerned, be termed the temporary death of anæsthesia.

It may seem absurd to make such a comparison, but if we accept Dr. Osler's conclusions, why do the vast majority approach the Great Divide without any apparent qualms, and yet when it comes to the induction of anæsthesia, which does not involve any more risk than say a "railroad journey," mankind in general is assailed by a thousand fears? Why is it that one, after considerable experience, is apt to marvel at the stoicism of an individual who approaches the shrine of anæsthesia without fear and trembling, even as the mighty "Achilles marvelled at the composure with which the still living Ulysses, during the course of his visit to Hades, wandered, without divine escort, among the scenes of preternatural terror, at which a living Achilles might have shuddered?"

I suppose the explanation lies in the fact that in the case of death, the soul does not wrench itself violently from the body—the conscious mind is not blotted out instantaneously like the dropping of a lid on a box; in other words, the last end represents the culmination of the

inevitable—one is not called upon to make the decision, in the same way as Aeneas or Ulysses were called upon to visit Hades, or as the individual is ordinarily called upon to undergo the process of anæsthesia.

"Even when great pain has been suffered in the last struggle for life, when Death finally claims his victim for his own, he mercifully lulls him into insensibility or indifference. Whatever fear of the unknown there may previously have been seems to pass away with the ebbing tide of life."

But while during the early moments of anæsthetization, it may seem as if "one were carried for the moment out of the body" (some individuals will tell you they felt as if they were going "down, down, down," until they struck nothingness with a bang), it is not a merciful ebbing of an already dulled spirit, but on the contrary, the more or less instantaneous and disagreeable blotting out of an intensely vivid consciousness.

Occasionally something of the sort is experienced by sufferers from insomnia; sleep is coaxed with difficulty, and yet when the actual moment draws near for "dropping off" into the long sighed for and yawned for state, a hesitating halting feeling somewhat akin to fear is experienced, for here, too, there is an abnormal perception of the transition between wakefulness and sleep.

In 1876, Dr. Bigelow, of Boston, in concluding an address, said:

"There is hardly an inhabitant of the civilized world but can remember some one of those nearest to him in whose experience the anguish of the knife or of disease, of birth or of death, has been assuaged by anæsthesia, perhaps converted into a pleasant dream."

Surely, such a statement can be made to-day with added positiveness, if such were necessary; and yet I venture to assert that anæsthesia is the psychological bugbear of the surgical world to-day. This is suggested, too, by the fact that in New York, in recent years, a large number of operations, including herniotomies, have been performed under local anæsthesia, while spinal anæsthesia has been much discussed and experimented upon. In London the spectacular sight has been observed of a patient having his leg amputated (at one end) while he enjoyed a cup of tea (at the other). Surely, tea may, in such a case, be said to be the panacea of all evil!

Nowadays, the patient allows the "knife" to enter but slightly into his pre-operative ideas; the sum-total of any surgical procedure is expressed by five letters which loom up in his mind as large as the topmost letters of Snellen's Test Types and make up the appalling word "ETHER."

"Just as one man, before consciousness is utterly abolished, sings,

while another swears, and a third confesses his sins," so some would-be connoisseurs will say they "dread the ether" because of the initial choking sensation or the after vomiting, if they have already had the experience; others will tell you they fear they will not come out of it alive, which latter apprehension is limited, in great part, to patients undergoing the process for the first time, but over and above these cases there are many who cannot or will not give adequate reasons for dreading it, and whose fears are mixed up with such a feeling of indefiniteness, that I have come to the conclusion that it is due to the approaching loss of consciousness and to the "anæsthetic shadows" which loom up in the patient's mind when faced with temporary self-effacement. Moreover, mingled with their vaguer apprehensions, is the undercurrent that they are about to undergo a very unpleasant experience.

And it is no light matter, this giving up of one's intensely conscious mind, even for a short period, in this age of mental tension; and without desiring to prophesy, it seems to me that the process will become harder as time goes on, unless there is a radical change in the civilized tendencies of the present time. The prospect of etherization makes strong men turn pale, and who knows that if Julius Cæsar had been obliged to undergo the sensation, he might not have uttered his famous words regarding fear:

"Cowards die many times before their death,
"The valiant never taste of death but once;
"Of all the wonders I yet have heard
"-It seems to me most strange that men should fear
"Seeing that death, a necessary end,
"Will come when it will come."

That it is not due merely to any awesome conception of surgery in general in the lay mind is shown by the fact that even a physician's philosophy and science are inclined to waiver at the prospect of having the ether cone applied to his Hippocratic nostrils; but here the materialism of the average medical mind is shown by the fact that his fear is of an eminently practical nature, and may be summed up as follows:

I. Failure of circulation.
II. Failure of respiration.
III. Aspiration or ether pneumonia.
IV. Embolism.
V. Mucus.
VI. Ether eye.

At this juncture, permit me to remark that, while nervousness may be

the "sad prerogative of woman," the latter sex does not, as a rule, betray nearly as much fear as men do in the anæsthesia room. Whether it is because their natures are *per se* more placid and yielding than those of men, or whether it is because they are less addicted to a fluid which has for its chemical formula $C_4O_2H_6$, it is difficult to say, but certainly the gentler sex seem to pass into the narcotic state in a more matter of fact, has-to-be or this-way-please fashion.

Considered from a practical standpoint, however, and for the purposes of surgery, the unpleasantness of ether anæsthesia is responsible for a good deal of the dread entertained by the majority of intelligent individuals, and the knowledge of its disagreeableness is quite universal. I have seen ether administered in several cities of the world, and at times it has been quite impossible for one not to realize some of its loathsome properties, and, without desiring to enter into any controversy in regard to the relative merits or demerits of chloroform and ether, but considering them only from the standpoint of æstheticism, I, for one, believe that surgery would have been a far more æsthetic art if ether had never been discovered.

It may be said that the fear of any induced state soon vanishes if its approach is rendered pleasant. Nitrous oxide, for instance, is not feared as a rule, although the loss of consciousness may be fairly complete. The world has possibly indulged in alcohol, opium, cannabis indica, cocaine, and other drugs, because the semi-narcotic state thereby induced carries an element of pleasure or of exhilaration with it, and with its usual callousness it forgets all about the danger.

Possibly, if surgical anæsthesia could be made an absolutely pleasant process, one could look forward to it, if not with intense delight, at least not with that dread which every surgeon of to-day has to consider when he broaches the subject of operation to a patient. Some day, perhaps, the brilliant laboratory researches of a physiological chemist will evolve an anæsthetic which will combine pleasantness, utility and absolute safety, and preferably one that will not entail one's giving up one's consciousness. This anæsthetic will be prompt in its action, and its induction will be independent of any efforts on the part of the patient. If it be necessary for the patient to lose consciousness he will be anæsthetized amidst the comfort and privacy of his room, so that his feelings will be spared the journey from the ward to the operating room, which is apt to bring to a sensitive or imaginative mind the picture of the old French tumbril of revolutionary times.

As regards absolute safety in an anæsthetic, however, this is, to my mind, on the same par as absolute zero of temperature; that is, it is an

entity that exists only in thought, for in general anæsthesia, not only the relative toxicity of the anæsthetic in itself has to be considered, but the condition brought about by its action, and so long as the nervous system must be rendered inert and converted into a state that is a physiological deviation from the normal, then so long will there be danger.

But until the somewhat Utopian dream outlined above is realized, what can we do in the direction of æsthetic anæsthesia? and when I make use of the latter expression, I have in mind those cases which constitute the great part of that deliberate operating which is such a feature of our surgical amphitheatre to-day, many of which are elective, and perhaps mere essentials to comfort and only remotely questions of life and death. In these cases it is our duty to render the anæsthetic approach as pleasant as possible. In emergency cases, where every moment counts, and where the patient's consciousness is dulled to almost non-perception, the anæsthetic is either hailed with relief or absolute apathy, and here the only reasonable consideration should be in the direction of safe anæsthetization.

A great deal might be accomplished in the way of a more thorough and a more practical training in anæsthetics for our medical students, though we must recognize, as the *Lancet* has stated, "that anæsthetics have less allurement than let us say bacteriology, and examinations of the dark passages of the human frame offer more interest to the beginner than acquiring a perfunctory acquaintance with the processes of narcosis."

You or I, no doubt, preferred "carving destiny" in the dissecting room to observing the relative size of the pupil during the different stages of anæsthesia.

Anæsthesia has not kept pace with surgery during the past sixty years, and I imagine that phantom fame is responsible, to some extent at least, for this fact, for "while it is usual to hear of the wonders of modern surgery and the triumphs of the scapel, how often is it recognized that a skilled and experienced anæsthetist has fought for a patient's life through a weary hour or more, and has enabled his colleague, the eminent surgeon, to accomplish another victory?"

We hear a good deal from time to time respecting the necessity for the development of the expert in anæsthesia, but it should be remembered that the specialist can only be evolved from a large number of good anæsthetists, and in order that the latter may be produced we must train all our students in a consistent manner. In the hospitals of New York, a certain fixed period of the service of every house surgeon is devoted to the administration of anæsthetics, with the result that anæsthesia is put

on the same level as any other surgical work, and carries with it a considerable monetary value in the first few years of practice owing to the conditions which prevail in New York. Moreover, every hospital has its special anæsthetist, who is generally an outside man, and who, in addition to giving anæsthetics to private patients, trains the "green" men who come on service in July and January.

The use of nitrous oxide as a preliminary to ether is quite prevalent in America, just as it is in the Royal Victoria Hospital, and the result is, on the whole, satisfactory. One finds that in the majority of cases of nitrous oxide-ether anæsthesia—and certainly in all the successful cases—the loss of consciousness is quite immediate and not at all unpleasant, and the disagreeable taste of ether, to which most patients object, is not experienced; and it should be the ambition of the administrator to avoid this sensation. Then, again, the mere fact that patients are promised nitrous oxide as a preliminary to ether seems to alleviate their dread to some extent, for in all hospitals patients tell their experiences to one another. Finally, there is usually less struggling, and when a patient enters into the anæsthetic state peacefully and quietly, the awakening is apt to have the same characteristics.

In conclusion, the question of anæsthesia in general may be said to constitute one of the many problems of surgery, and our watchword should be the late Cecil Rhodes' famous slogan: "So little done, so much to do."

THE RECENT REACTIONARY TEACHING CONCERNING SUMMER DIARRHŒAS.

BY

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That there is nothing new under the sun is a truism that will be emphasized here. This sounds paradoxical to the title of the paper. Yet the recent discoveries in infantile diatetics, as brought out below, were not unknown a couple of generations back. They have only been ignored since then. Their recent revival will, however, stand "four-square to all the winds that blow," for they are amply substantiated by numerous careful clinical observations and experimentations, as well as by thorough researches in the laboratory. As one of the results of this work, the system of infantile diatetics generally preached has been revolutionized.

Read before the Montreal Medico-Chirurgical Society, May 6th, 1910.

The authors of this revolution are Professor H. Finkelstein and his assistants, Doctors Ludwig F. Meyer and J. Rosenstern.

Their teaching has already gained ground in Berlin and many other parts of Germany. On this side of the Atlantic it is barely known, and still less acknowledged. Particularly in Canada, the few who are cognizant in only a general way, are diffident of it. This is, however, not the only instance of opposition to innovations in Medicine. As eminent a scientific man as Charles Creighton disputed the value of vaccination as late as fifteen years ago. There exist a sturdy few, even to-day, who disclaim the Theory of Evolution. What criticism did not Lister have to contend with before the tide began to turn in the direction he indicated. To-day the other extreme has been established. We live in a "Bacteriophilic" Age. Truly there is still marked evidence of the existence of Chauvinism in Medicine.

Yet to one who has seen the success in practice of this new teaching, such opposition serves only as a stimulant. Say what you will, infantile diatetics as taught and practised to-day in connection with the terrible summer diarrhœas is mainly empirical. And, although he is rowing against stream, yet Finkelstein moots this new dietetic therapy from a purely radical standpoint.

And, supposing this paper has not accomplished the conversion of those who would disclaim the pathogenesis of summer diarrhœas as set forth by Finkelstein, let us hope it will have succeeded in reducing the propensity to see all severe disturbances through "bacteriophilic" spectacles.

Just a preliminary word concerning the elaborator of this novelty. Finkelstein is a cautious *clinical observer* and a clear scientific thinker. He is, however, not unlike that genius of music, Beethoven—imperfectly capable of expressing his ideas in words. He is, in consequence, not a bright lecturer, and, at the same time, an infrequent one. Likewise, he is also tardy and non-prolific in his publications. These may explain to some extent the belatedness of the dispersion of his views.

Now, since the advent of the twentieth century, the medical profession is getting to recognize more and more the role played in diagnosis by the Laboratory. Not the bacteriological laboratory alone, but the chemical laboratory has rendered its service to medical science. It was the perception of this that actuated Finkelstein in the work which led to these disclosures. At the *Städtischen Kinderasyl,* in Berlin, of which he is the chief, every modern laboratory convenience has been installed. The institution itself contains about 200 cots for infants under one year of age. Every child is also considered as legitimate material for experimental research work in the interests of

humanity (superfluous is it to mention that unnecessary or extreme risks are never permitted). In connection with every patient admitted, a certain systematic routine is carried out. Part of this routine consists in the thorough examination of the urine and the fæces. But, you ask, how is it possible to collect the urine or the fæces, separately, in an infant, only a week old for instance? The vessel is certainly not maintained *in situ* for a few hours by the patient hands of a nurse. They have a much simpler device.

In the male infant, the penis is inserted into a test-tube, then the diaper being applied in a particular manner, easily keeps it in place. An infant's size female glass urinal is employed in like manner in an infant of the opposite sex.

In order to collect the fæces, the following mechanism is employed. A sort of canvas hammock is suspended over the cot being tightly strung between the raised railings at the head and the foot. The half of the hammock next to the foot is longitudinally split up. The child is laid on the hammock, its lower limbs being secured to these two lateral flaps, respectively. The rest of the child's body is also secured accordingly. In this position the child remains, in a fairly comfortable state, for about 24 hours. The lower limbs being separated, the fæces drop to the cot where they are received in a basin. The urine is separately collected in a test-tube or in a glass urinal according to the method mentioned above.

I.

Acute Gastro-Enteric Intoxication is the generic term employed by Holt as the synonym for the disturbances known as summer diarrhœa, gastro-enteritis, cholera infantum, or mycotic diarrhœa. In defining the condition, Holt asserts that it is "due mainly to the absorption of toxic materials, the result of putrefactive changes in the intestine." In accord with most authorities, he calls it an infectious condition of the alimentary tract.

Intoxication, pure and simple, is the term preferred by Finkelstein for this same clinical condition. He selects this term because it is non-committal as to the etiological factor. Of others he would prefer that of *Alimentary Intoxication.* He specifies the alimentary tract as the haven of the offending agent. But, he denies that in the bacteria, and in the products of decomposition of the food within the alimentary tract, lies the pathogenesis. In the subject matter to follow, the term Intoxication will, therefore, be the one employed.

This paper does not pretend to be more than an epitome of the ways and means by which these conclusions were reached. The research

work carried out in the laboratory will be merely referred to. The experimental induction of this disorder will be described. We shall also point out how the conclusions resulting from this work materially influence the practice of dietetic therapy.

Let us see what, according to Finkelstein, constitute the symptom-complex of Intoxication:

(a) Disturbance of consciousness.
(b) Characteristic alteration in the breathing.
(c) Alimentary Glycosuria.
(d) Fever.
(e) Collapse.
(f) Diarrhœa.
(g) Albuminuria and Casts.
(h) (Sudden) Drop in Weight.
(i) Leucocytosis.

At once one notes that two of the nine signs and symptoms have rarely been quoted in previous descriptions of this disorder. I refer to the characteristic alteration in the breathing and to the glycosuria.

The *breathing* of such children is pathognomonic. The child takes "*heavy,* deep breaths that are prolonged and somewhat rapid." In very grave cases they are "of a sighing and panting character."

The *glycosuria* is decidedly pathognomonic. Besides being symptomatic, it is nearly always premonitory. It foretells the coming of the storm.

That sugar is excreted in the urine of infants suffering from acute gastro-enteric disturbances is not entirely new. Lesage, von Hofstein, and Gross remarked this some years before. No particular interest was, however, entertained, until recently Langstein and Steinitz took up the thread. They examined the urine in fourteen cases of severe Gastro-enteric disorders, and found sugar and allied substances present. It is of interest to note that all of these cases, except one, were being fed on the breast.

Following upon this, Finkelstein and Meyer showed the same condition in over one hundred and fifty cases of Intoxication. Through the admirable and freehand system at the Kinderasyl, as above described, they were able to show that sugar appears in the urine even *before* the clinical symptoms have made their appearance. They remarked that most of these were breast-fed babies, the remaining ones being fed on cow's milk. They also observed that within five or six hours after all food had been withheld, the sugar disappeared from the urine. In light cases, on resuming small quantities of the same food—after starvation—the sugar remained absent from the urine. In severe cases it

reappeared. Thus, in the case of one child that was being fed—after a period of starvation—with only one and a half teaspoonfuls of breast-milk, five times in the twenty-four hours, the glycosuria returned.

This glycosuria is not a symptom of Diabetes. In the latter disorder the sugar is in the form of glucose; in Intoxication it is lactose and galactose, while glucose is extremely rare. Should the latter be found in the urine of "Intoxicated" children, then the case is a very grave one. As a rule, the metabolism of the average case of Intoxication can burn up a monosaccharide—especially glucose—fairly easily. It is the lactose and galactose that are so difficult of oxidation.

Now, if lactose alone be excreted, the prognosis is a happy one. It shows that the part at fault is only the intestinal epithelium, and not the general metabolism. It proves that the intestinal epithelium has failed to produce the invertin. The usual inversion of lactose into galactose and dextrose has, therefore, not taken place, and the lactose is allowed to enter the circulation unchanged. But the tissues are, as a rule, unable to oxidize the disaccharide, and it is, therefore, excreted in the urine. But, if one of the inverted products—galactose, for instance—is found in the urine, then it speaks gravely for the child. It shows that the whole metabolism is deranged. It shows that although with a healthy metabolism a monosaccharide is easily oxidised, in the present state of metabolism it is impossible.

Let us here interpolate that no glycosuria was found when farinaceous foods were administered to cases of Intoxication.

A series of researches were carried out to investigate the state of proteid metabolism in Intoxication. The following is only the gist.

A noteworthy case of *Decomposition** is recorded. It shows something of extreme interest. In spite of the constant decrease in body weight, *the nitrogenous constituent of the body tissues suffered comparatively little loss.*

In contradistinction to this, he quotes the following case out of a number. It is one of typical Intoxication. On August the 8th, 1905, a five-months-old infant in a rundown condition was admitted to the wards of the Kinderasyl. Weight, 3,750 gms. (cf. a normal of 5500 gms). It was then fed with ⅔ (non-contaminated) milk plus 5% sugar. Eight days later it had acquired a severe Intoxication. The body-weight dropped to 3,280 gms. The child was starved for a day—only

* By *Decomposition*, Finkelstein signifies the disturbance which is usually known as dyspepsia, and which is due to the absorption of the products of decomposing food in the intestinal canal. This fits in with Holt's definition of Acute Gastro-Enteric Intoxication But it differs from true *Intoxication* mainly by the absence of two cardinal signs—the glycosuria and the characteristic breathing.

weak tea, without any sugar, being allowed. The body-weight rose 20 gms. In the next twenty-four hours the patient received 100 to 140 gms. ½ milk plus 5% sugar. Two days later the body-weight was diminished by 180 gms. and the following day the child died.

In the case of this child it was found that the amount of nitrogenous matter excreted in the urine was far greater than in the cases of some other children who had recovered after a two-days period of starvation. Hence, the deduction follows that intoxication favours an increased disintegrating process of the proteids of the body-cells—a very grave state certainly.

They also observed that the urea-synthesis in cases of Intoxication is grossly reduced and that the NH_3-coefficient (i.e., the proportion of NH_3 compounds to the total nitrogenous substance of the body) is markedly increased, showing, therefore, that in Intoxication there is a grave disorder of metabolism present, that overshadows all other signs, even the gastro-intestinal.

Regarding the researches in the fat-metabolism, no definite statements have as yet been made.

II.

We shall now see what was revealed by accurate clinical observation on ordinary and on experimental cases of Intoxication in Finklestein's Institute. (Unless otherwise stated, it is to be understood that the milk employed in these experiments was as free from bacterial contamination as possible).

From the result of the researches in metabolism above mentioned, they were led to try the following series of experiments.

They took a number of infants that were in comparatively good health. These were fed with buttermilk containing 5% Liebig's sugar in solution. Daily, the quantity of food was increased fairly rapidly. After two weeks the symptom-complex of Intoxication became manifest. In a certain number of them, food was then withheld for from 12 to 24 hours; only weak tea, without any sugar, was allowed. After this, skimmed milk in small quantities, increased very gradually, was given. The de-Intoxication then took place rapidly. In some of the children, the de-Intoxication occurred after the starvation period alone; in others, not until after the skimmed milk had been given. In the remainder of these experimental cases, the children were not starved. The same food was continued, but the additional sugar was excluded. Yet de-Intoxication took place just the same.

In another series of experiments, a number of weakly infants were

fed with Keller's *Malzsuppe*. This is a preparation containing the following:

Wheaten Flour	50 gm.
Malt Extract	100 "
Milk	330 "
Water	660 "

The result of such feeding was soon manifested in a severe Intoxication with bloody and purulent discharges in the stools. A few of these cases ended fatally, in spite of subsequent treatment. In fact, of the total number of deaths from Intoxication experimentally induced by the various food-mixtures, those originating from the *Malzsuppe* constituted the greatest bulk.

Note the following apparently paradoxical record. Finkelstein relates cases of *Intoxication produced by overfeeding on the breasts of their own mothers*. He also points out that a number of cases of Intoxication recovered only very slowly on the breast. Others he has also noted, who had progressed favourably under starvation, yet suffered a relapse when returned to the breast. Indeed, one or two of these cases terminated very quickly in death. There were also cases in which recovery after starvation was succeeded by severe relapse—in one case ending fatally—through the too hasty addition of fat to the food.

I transcribe the following two cases on account of their emphatic contrasts:

"Julius B. Four weeks old. Experimental Intoxication induced through $\frac{1}{3}$ milk plus 5% Liebig's sugar. Further aggravation when a 5% solution of sugar alone was administered. Then small quantities of breast-milk alone, and weight stopped falling. Death following upon collapse. No complications."

"Otto F. Two months old. Intoxication through (daily) 500 gms. buttermilk with full milk. Critical (rapid) recovery on tea and the casein out of 500 gms. skimmed milk."

These and other experiments and investigations, therefore, conduced to a new conception with regard to the pathogenesis of cholera infantum. It is a conception that is revolutionary to the one generally upheld at the present time. Briefly, this conception is as in the following *resumé*.

III.

The symptom-complex that is known by the names of Acute Gastro-Enteric Intoxication or Summer Diarrhœa or Cholera Infantum is, in the main, not an infectious or contagious disease. It is, in the large majority of cases, not due to the absorption of the very toxins of the

bacteria, nor of the toxic decomposition products of bacterial decomposition, within the alimentary canal. The above-mentioned carefully worked-out facts sustain this.

It is remarked, for instance, that within twenty-four hours after starvation has been instituted, the temperature usually recedes to about the normal. Were the condition infectious, such would not be the case. In some few cases, the temperature does not fall to the red line. In these, one therefore concludes that a co-existing infectious condition—whether of the alimentary tract or elsewhere—is present.

Why is it that the majority of cases of intoxication show none—or almost that—of any pathological lesion of the intestinal mucosa, beyond some hyperæmia? (*cf.* Holt). Should there not be a definite localized lesion, if this were essentially a mycotic disorder? Thus, we can easily understand in diphtheria how there is a general intoxication of the circulation, which is due to a manifest localised lesion—the bacilli inhabiting the leathery-gray membrane only. Similarly, in typhoid fever, the bacilli are centered chiefly in the Peyer's patches and solitary follicles of the intestine, whereas the symptoms and disturbances are generalised. They are toxic. But, in the summer diarrhœas—excepting the rarer illocolitic forms—can one indicate any particular gastric or intestinal lesion in which the bacteria have made their stronghold? Is it not true that no such lesions have been found even in some of the gravest cases? Has not one remarked, time and again, how the acute general disturbance is by far out of proportion to the alimentary or gastro-enteric symptoms?

Has a single bacterium been unearthed that was definitely concurred in by most authorities as the cause of this condition? No! Now and again, some worker discovers a bacillus only to find that another investigator honours a totally different one.

How, then, is one to account for the *Leucocytosis* that is present? For, apart from the outcome of the concentration of the blood through the rapid loss of the body-fluids, there can, no doubt, be proven an absolute leucocytosis. Let us, however, pause for a moment. A leucocytosis does not necessarily signify an infection. It is well known, for instance, that certain drugs—pilocarpine, antipyrine, salicylates, and ergotin—will produce it. Likewise, certain auto-intoxications—of which gout and uræmia are examples—will evidence it. In infants, Japha and Schlesinger have shown that it may occur in conditions other than infectious inflammation of the gut-wall; it occurs in cases of alimentary disturbance that is accompanied by general poisoning-symptoms. Surely, therefore, the hypothesis of the generation in the intestine of bacterial toxines and their absorption into the blood-stream cannot hold!

What about the hypothesis concerning the absorption of putrefactive products? This, too, cannot hold. It is true that when the bowel is cleared of all its contents, those grave general symptoms abate. But supposing the same quality or quantity of food be reverted to, and supposing all aseptic precautions regarding the food have been employed: will the severe symptoms remain in abeyance? Finkelstein has replied to this through various experimentations and observations, in the negative.

Besides, it has been observed that Intoxication will complicate infections that have their mycotic seat outside of the gastro-intestinal canal. Thus in pneumonia, measles, scarlatina, whooping-cough, etc., or any septic condition, a concurrent alimentary disturbance—often a true *Intoxication* has been recognized.

Where, then, is one to look for the origin of this disturbance?

The immediate incitative is a factor that has been heretofore overlooked. The presence of glycosuria opens one's eyes to a new view. The defective urea-synthesis, the excessive NH_2 coefficient, the excretion by the kidneys of the self same nitrogenous compounds ingested with the food (as proven experimentally)—all point distinctly to a grave disturbance of metabolism with deficient oxidation. Proteid, as well as fat, metabolism is deranged.

As has been demonstrated above, the mischief-maker is the sugar. It is reviving the now ancient teaching of the older physicians—that this is a "Sugar Fever." The experimentations above alluded to have conclusively proven that signs and symptoms identical with those of Cholera Infantum and its allies can be produced by the ingestion of excessive sugar. Predisposing and "preparing the soil for the seed" are, of course, those well-known factors—bad hygienic surroundings, excessive or indigestible diet or both, premature birth and debility, debilitating infectious diseases within or without the alimentary tract. The so-called "Buttermilk Fever" is nothing more nor less than Sugar Fever, produced by the superadded sugar, as exposed in the second section of this paper. Indeed, far from being injurious, buttermilk has been proven the safer food.

Sugar may be one of the richest of infants' foods, yet it is possible for the infant to be getting too much of a good thing. According to the elaborations of Finkelstein and his co-workers, no hard and fast rule exists concerning the tolerating quantity. Each child is individual in its tolerance. This individual tolerance is, however, often reduced by extenuating conditions—the so-called predisposing factors. Be it, however, remarked that breast-fed children come under the same category as those fed with cow's milk. But those children fed with sterilized and

proprietary infant-foods during the summer months, are much more on the brink of the volcano. That there is actually "poison in the pot" for these children is a well-known fact. Here, in fact, lies the explanation why the babies of the wealthy classes enjoy no distinctive immunity from those of the poor—despite the religious asepsis. That the proprietary infant-foods are extremely rich in sugar is well known to the reader.

What harm—if any—is there from the fat in the food? The predisposing factors aiding and abetting the intoxicating power of the sugar, serve also for the fat—but to a much smaller degree. This is Finkelstein's teaching. Very often excessive sugar will induce even the prodromal dyspepsia that usually proceeds Intoxication. The fat, however, is rather like the last straw that broke the camel's back. It never produces the prodromes themselves, but it often precipitates the latter into the intoxication. The fat in the food also seems to add fuel to the fire.

And now we can see why breast-milk is often the wrong food to employ immediately after the starvation period. Thus, also, Salge has shown that Intoxicated infants when fed on centrifugalized (fat-free) breast-milk did well. Hence, it is erroneous to believe that cases of summer diarrhœa that do not improve on the breast are doomed.

What harm—if any—is there in the casein? Finkelstein and his staff in all their researches on this subject have been unable to demonstrate anything but benefit from feeding albumin or casein (without the whey). None of the so-called toxic decomposition products could be proven.

IV.

Lastly, what can we do for such children?

1. As is generally taught, so also here—withhold all food for 24 hours or more. Give boiled water or weak tea *ad. lib.* If it is necessary to sweeten, do not add sugar but use saccharine instead.

2. Stimulants p.r.n.

3. Feeding should be resumed with extreme caution. Especially, do not at once put the child to breast. Give very small quantities of food to start with. Make up the difference in the small quantity of fluids given, by abundance of water or weak tea, as above; this is very important. As regards the kind of food: begin with one that has very little or none of sugar and fat. Begin to add sugar and fat very gradually, and while doing so be on the watch against the return of symptoms. Each case will have to be judged on its individual merits as to how soon these two constituents may be added, and how quickly increased to the usual quantity.

An ideal plan is as follows:—

Starve the child. In extreme urgencies, however, starvation will have to be dispensed with. Water or tea, *ad. lib.*, as above. Then, give buttermilk (without any additional sugar), one drachm and a half, five times during the first twenty-four hours. Water or weak tea *ad libitum.*

The second day, double the quantity of food. The third day, often not till the fourth day, give an ounce (or as much as you may consider safe) of the following preparation:—

Water . . . . . 1 pint.
Buttermilk . . . . . 1 pint.
Casein (from 2 pints of milk).

The casein employed in this mixture is derived from the best milk by the addition of rennet. The whey is, of course, discarded. The curd is dropped into a fine hair sieve. The water having been previously boiled and then cooled, is slowly poured over this: meanwhile the curd is being continuously chopped up and rubbed through sieve. The resultant filtrate is returned to the sieve, and the process repeated. This is done a few times until the casein particles are so finely divided as to easily pass through the meshes of the sieve. The buttermilk is then added. The mixture must be kept in a cool place, and it must be made fresh every day. The container must be shaken well before doling out a part of its contents, for the casein particles tend to gravitate.

After three days, or even longer, of this feeding, add 1% of sugar. Then raise this quantity quite gradually to 5%—being ever on the look-out for a recurrence of the toxic symptoms (rise of temperature, green, mucinous, non-homogeneous stools, characteristic breathing, alimentary glycosuria, etc.). When the child is well past the danger of relapse, one may once more resume its usual feeding. It is important to note that the disappearance of sugar from the urine takes place concurrently with that of the disturbance of consciousness.

Prophylactic Measures.

In addition to the general hygienic measures, the following merit special mention:

In breast-fed infants: Beware of too frequent feeding and of over-feeding. It is much safer—and often soothing enough—to give an extra feeding of unsugared water or weak tea than of the breast. When you notice the least sign of dyspepsia, reduce the number of feedings *per diem.* Sometimes it is even advisable to stop the breast for 12 hours or more.

In artificially-fed children: The same applies. In addition, the following are of extreme importance. Employ the proprietary foods

with extreme precaution. Cow's milk, diluted, is much preferable in the summer months. When the fore-runners of the squall—in the shape of dyspeptic symptoms—make themselves manifest, either the superadded sugar must be eliminated entirely, or its quantity materially reduced. Likewise, it is often advisable to reduce the quantity of fat. In this connection it will be seen why the following sentence deserves to stand by itself in italics.

One can never be too much impressed with the fact that in the summer months an ordinary innocent dyspepsia—green, non-homogeneous, mucinous stools, etc.—can be easily launched into a severe Intoxication, through indiscretions in the quality as well as in the quantity of the food.

In dubious cases of dyspepsia in infants, especially in weaklings and those of premature birth, examine a specimen of the urine. Lactosuria and galactosuria is present in the urine previous to the transition of a simple indigestion into Intoxication.

This alimentary glycosuria is, therefore, the most reliable danger-signal and should guide the physician in the necessary course he is to take.

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THE NEW CURE FOR SYPHILIS.

It will be easy enough five or ten years hence to say whether or not the so-called "606" is a cure for syphilis, but it is by no means so easy to-day. The drug that has been applied to the cure of syphilis by Ehrlich has already produced results so striking as to forbid us to take too sceptical a view of its possibilities. It must be admitted that there are from the outset things to regret; if it should prove a cure for syphilis it is a pity that it should be known by a number, and it is also a pity that one firm seems to have been allowed to patent it. Drug-manufacturers have made stupendous amounts of money out of suffering humanity in the sale of a preparation like diphtheria antitoxin, and science has gone bare; is this to be another case of the same?

The main fact of interest, however, is that this drug—an organic compound of arsenic—may actually be a cure for syphilis. Those who have thought of the cure of syphilis in terms of years, and of endless trouble, and of disheartening obstacles and relapses, will find it hard to believe that a single dose can supply the place of it all; but this is an essential part of the process; the preparation of arsenic is injected in one large dose to overwhelm the spirochæte or treponema; lesser doses, not fatal to the organism, serve only to allow it to develop an immunity to the drug. The danger exists that in killing the organism one may kill the patient, or at least that in destroying the intruder one may damage the tissues of the host, and, as a matter of fact, some deaths have already occurred by its use. This may be the price that humanity has to pay for this par-

ticular blessing. We can safely predict that this danger will not prevent its having a full trial, for there are syphilitics who would readily die for a chance of cure; its value must be determined by experiment, and the case must be straightly put to the patient concerned; time alone can tell the truth about the completeness of the cure. In the meantime, we can wait in good hope that the new preparation—arsen-phenol-amin—is an advance upon our previous methods.

DEATH OF DR. ROTTOT.

It is with much regret we record the death of Jean Philippe Rottot, formerly dean of Laval University, who died 28th September, after a long illness, at the advanced age of 85 years. Dr. Rottot was probably the oldest physician in the province, and had been in active practice for over sixty years.

Jean Philippe Rottot was born at L'Assomption in 1827, and after his admission to the practice of medicine in 1849 established himself in Montreal. He soon secured an extensive practice, and the confidence of his fellow-citizens brought him in 1856 to the City Council, where he represented St. Mary's ward until 1859.

Dr. Rottot was a member of the Montreal School of Medicine and Surgery until the establishment of the Montreal branch of Laval University, of which he was one of the founders. He was dean of Laval for many years, having resigned in 1907. His confreres tendered him a complimentary banquet, and he was entertained by the medical faculty in 1897, on the occasion of his professional jubilee.

In 1849 Dr. Rottot was appointed a captain in the 10th Battalion of the Canadian militia, under Lord Elgin. He was married twice. His first wife was Sarah O'Leary, and the second Dame Aglae Benoit, who survives him. He leaves two sons, of whom the Rev. Father E. Rottot, S.J., is one.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The first regular meeting for session 1910-11 was held in the Society's rooms on Friday evening, October 7th, at 8.30 sharp. The Society was addressed by Dr. Thomas McCrae, of Baltimore, who took as his subject "Chronic Rheumatism." After the address there was an informal "Smoker."

The following Papers have been arranged for the dates mentioned:

October 7.—An address by Dr. Thomas McCrae, of Baltimore, on "So-called Chronic Rheumatism."

October 21.—The President's Annual Report, W. Grant Stewart.

November 4.—Symposium on Röntgen Rays.

November 18.—Acute Epidemic Poliomyelitis, D. A. Shirres.

December 2.—The Treatment of Pelvic Contraction by the General Practitioner, D. J. Evans.

December 16.—The Open Treatment of Fractures, with a Lantern Demonstration. J. M. Elder.

Officers: President, Dr. C. F. Martin; Vice-President, Dr. J. M. Elder; Treasurer, Dr. R. P. Campbell; Trustees, Dr. A. T. Bazin, Dr. W. F. Hamilton, Dr. J. Alex. Hutchison; Secretary, Dr. Hanford McKee, 249 Mountain St., Tel. Up. 4035; Meetings: 8.30 p.m. First and Third Fridays of each month from October to June. Telephone in Rooms Up. 2646.

Reviews and Notices of Books.

Diseases of the Colon and Their Surgical Treatment. By P. Lockhart Mummery, F.R.C.S., Eng. Bristol. John Wright and Sons, Ltd., 1910.

In these days of much writing and publishing, there has arisen a class of medical book whose position in the book-world lies somewhere between the large students' textbook and the monograph. The books to which we refer lack alike the conciseness of the one and the detailed knowledge of the other. They treat usually of the diseases of some particular organ or system, not of some particular disease or aspect of disease. Their field is too broad for the monograph and not broad enough for the textbook. The student, or practitioner, finds them too long, and the specialist finds them too short. They fall between two stools. They lack a justifiable *raison d'être*.

In the reviewer's mind the forelying book belongs essentially to this class. Yet, in saying this, one does not mean that such books do not represent much labour and much sound, even valuable, work. They often do, as does in fact the present volume. No; but the labour is misdirected. On the one hand, the work of covering the field properly involves the repetition of much that the textbook gives; and on the other hand, the limitations set by the publisher and by the author's own time, forbid that full and deep treatment of the subject for which the more experienced man is looking.

In this book, of 317 pages, Mr. Mummery devotes 41 to a brief consideration of the anatomy, development, physiology, both normal and pathological, and the bacteriology of the colon. The value of these

chapters is somewhat lessened by their brevity, and by the lack of all but the scantiest bibliography. Indeed, this lack of consideration of other work in this same department is sadly evident throughout the book. What few references are given are almost entirely to British literature. For instance, in discussing the blood supply of the pelvic colon, the work of Jamieson and Dobson is the only one mentioned, although a great deal of it had been anticipated by American and Continental workers. In the chapter on occlusion of the colon, Mr. Mummery relates, briefly, the results of certain experiments of his own on cats, which proved that the meteorism of occlusion is the result of bacterial action, that the gas formed consisted chiefly of CO_2, and that this gas was normally reabsorbed by the venous blood. Thus, when the venous circulation is blocked meteorism may develop, with or without occlusion.

The succeeding chapter upon methods of diagnosis is one of the best. It is practical and fully up-to-date, and is clearly written out of the fulness of experience.

In chapter VI are considered the congenital abnormalities of the colon. The bulk of it concerns that obscure condition known as congenital dilatation and hypertrophy of the colon. This is treated with some fulness of detail, and the author reports briefly a favourable result in one of his own cases from the operation of appendicostomy with daily irrigation of the dilated colon. This is, so far as we know, a new procedure in the treatment of this rather desperate disease, and deserves consideration as well for its harmlessness as for the good result obtained.

The chapter on volvulus of the colon is a brief but good presentation of the subject. The following one, on adhesions and kinking of the colon, must be considered as somewhat inadequate, particularly that part of it which concerns treatment. The pages devoted to "enteroptosis of the transverse colon" are valuable. Diagnosis by the X-Ray picture, following a bismuth injection, as in Hertz's method, is commended; as to treatment, the writer discourages operation, and is markedly conservative.

The chapter on "chronic mucous or membranous colitis" is, perhaps, the best in the book. Mr. Mummery is strongly in favour of an appendicostomy when medical measures fail; and he is able to report a considerable number of excellent results. The same is to be said on the chapter on ulcerative colitis, the acute cases of which are so fatal. Here, again, an appendicostomy in his experience does much good, and is, indeed the only satisfactory treatment. He prefers it decidedly to a colostomy.

Then follow sections on simple perforating ulcer of the colon; on pericolitis, including "diverticulitis" (no reference to the considerable

amount of American and German work in this new field), on hyperplastic tuberculosis of the colon, on constipation, on simple stricture, on thrombosis or embolism of colic vessels; and finally, on operations upon the colon. All these, while good, and in one sense sufficient, disappoint the reviewer by their lack of a discussion of details. As against this, one welcomes the more or less frequent recital of personal opinion and experience. The two or three pages given to what Mr. Mummery calls "gas-pipe colon," a form of hyperplastic tuberculosis in which the whole colon, or a considerable portion of it, is converted by inflammatory infiltration into a rigid tube, are very interesting and rather new. In the question of constipation, it is pleasant to find him exercising a welcome conservatism with regard to Mr. Lane's operation of resection of the whole colon; and to find him advising copious doses of fats, especially petroleum. Where operation seems indicated, he is for the harmless appendicostomy, at first, anyway. This has given him encouraging results.

These particulars of a wide experience, scattered through the book, make its reading both pleasant and profitable, to a certain extent. In this sense, it is to be recommended to student, practitioner, and surgeon alike. But if the surgeon desires a résumé of the present-day knowledge of any particular part of the subject, he must go further.

E. A.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., M.A., F.R.S. (Edin.) Second Edition, revised, 402 pages, illustrated. W. B. Saunders Co., Philadelphia and London, 1910.

All are familiar with the work of Graham Lusk's Science of Nutrition. In the second edition he has endeavoured to bring the work as near up-to-date as is possible with a science that is making such rapid strides. The chapter on regulation of temperature should be carefully studied by every practitioner of medicine as it deals with the action of cold upon the body, the effect of the ingestion of food, the influence of climate, etc. The metabolism of protein fat and carbohydrate is covered in four chapters. One chapter is devoted to the consideration of the influence of mechanical work on metabolism, and two chapters to normal diet and food requirements during growth.

Six chapters are devoted to metabolism in anæmia, at high altitudes, in myxœdema, exophthalmic goitre, diabetes, phosphorus poisoning, metabolism in fever, and purin metabolism. In the last chapter, the recent theories of metabolism are briefly discussed.

The appendix includes several valuable tables published by the United States Department of Agriculture, Washington.

The aim of the book is to review the scientific substratum upon which rests the knowledge of nutrition, both in health and disease. Throughout, no statement has been made without endeavouring to give proof that it is true. The book should be of much value to the student of dietetics and to the clinical physician.

Clinical Obstetrics. By Robert Jardine, M.D. Edin., M.R.C.S. Eng., F.R.S. Edin., Etc., Etc. Third revised edition, 717 pp., 108 illustrations, and 4 coloured plates. Toronto: J. F. Hartz, Ltd., 1910.

This is an excellent book for practitioners, though better supplemented with a more extensive treatise on the operative side of the subject.

The interesting introduction is followed by a series of chapters on the complications of pregnancy, with illustrative cases evidently the experience of a man with extensive practice and keen observation. In this section the only flaw is the rather scanty treatment of syphilis and the characteristic differences between the normal and syphilitic placentæ.

Chapters on labour, its mechanism, management, and the normal puerperium, contain many useful hints, notably these.—"The third stage is usually over in about fifteen to twenty minutes.. If it is prolonged much beyond that, the placenta is, in all probability, adherent." The use of rubber gloves is considered unnecessary, deep cervical tears should be repaired, missing fragments of placenta or membranes should be immediately sought for and removed. In the estimation of the character of the puerperium "the pulse rate is a much safer guide than the temperature."

Five chapters on hæmorrhages are full and fairly complete. It is doubtful whether an absolutely satisfactory treatise could be written on placenta prævia. Jardine is conservative, advocates Braxton Hicks' method, but also reports a case of Cesærean section when there was pelvic contraction as additional indication.

Six chapters on delayed labour include two dealing with contracted pelves. In Glasgow 10 per cent. of the patients have evidence of rickets. "Each case must be judged on its own merits."

"Reactive natural labors" and "complex or complicated labours" occupy seven chapters. Many interesting illustrative cases are given. The subject of eclampsia is treated in this section. The author believes in the necessity of sweating and purging and the encouragement of diuresis by infusions of salt solution. If labour has set in the patient should be delivered at once, but where the os is rigid interference is not advised. Bleeding does good.

After a chapter on "missed labour," some eighty-four pages—five chapters—are devoted to "complications of the puerperium." Some

thirty pages are given to puerperal infection. This is the most unsatisfactory portion of the book. Few obstetricians will concur in the advice to use 1 in 2,000 solution of bichloride of mercury as an intra-uterine douche.

The "obstetric operations" are well described. There is a section on pubeotomy, but vaginal section is dismissed with a few words, the author has had no experience with it, and believes it will be seldom required.

Chapters on "accidents to the child during delivery," "diseases of the new born child," and "infant feeding," complete the main work, but an appendix is added containing many interesting and valuable tables of statistics from the Glasgow Maternity Hospital.

The book can be recommended as well written, well printed, and as containing much unusual information of value to the obstetrician.

H. M. L.

PROGRESSIVE MEDICINE. September, 1910. Lea & Febiger, Philadelphia. $6.00 per annum.

The contents of Volume III are: Diseases of the Throat, by Dr. William Ewart; Dermatology and Syphilis, by Dr. W. S. Gottheil; Obstetrics, by Dr. E. P. Davis; Diseases of the Nervous System, by Dr. W. G. Spiller.

HISTORY OF MEDICINE. By DR. MAX NEUBERGER. Translated by ERNEST PLAYFAIR, M.B., M.R.C.P. To be completed in 2 Vols. Volume I, 403 pages (1910) $6.50. London: Oxford Medical Publications. Toronto: D. T. McAinsh & Co.

This book comes to the reader with an introduction by Dr. Osler, done in his own unmistakable style. "Within the past twenty years," he begins, "there has been a remarkable revival of interest in the history of medicine. Chairs have been established . . . Societies and clubs devoted to the subject have been started; instead of one there are now three or four Journals, and the literature has been enriched with innumerable monographs and articles.

"A comparison of a volume of the *Index Medicus* for ten or twelve years ago with a recent one, shows how actively medicine is participating in the study of origins, and how much as a profession we are being influenced by modern historical methods." Dr. Osler then explains that the subject has several relations. For the student, the educational aspect is of incalculable value, "since medicine is best taught from the evolutionary standpoint;" as a study the history has peculiar attractions as a useful pastime for the leisure moments of busy men. He does not recommend, in view of the crowded state of the curriculum,

that the course should be made compulsory, since, as he remarked some years ago, an attractive course will catch the good man. The work which is being done upon the subject is enormous, after the example of Friend, Sprengel, Littré, Haesser, Daremberg, Adams, and Greenhill, —and, one may add, of Dr. Osler himself. Yet, in England, there is not a single chair of the history of medicine, although the Fitzpatrick Foundation, at the Royal College of Physicians, has yielded several important courses, and has brought out the studies of Dr. Payne in the medicine of the Anglo-Saxon period. Dr. Osler then summarises the work which is being done in Germany:—The collation under the direction of Professor Diehl of all the important MSS. in the libraries of Europe; the publication of a new text, under the auspices of the Imperial Academy of Berlin, of the Greek writers in medicine; the founding of an Institute at Leipzig as a memorial to the late Professor Puschmann, in which an entirely new edition of the Latin authors will be made.

The *Handbuch der Geschichte der Medizin* is the standard work of reference. It was designed by Puschmann himself, and edited by Neuberger and Pagel. Dr. Neuburger, the author of the book under review, is Professor of Medical History in the Imperial University of Vienna, where he was born and educated. The translation is done by Dr. Ernest Playfair. The present volume brings the history down to the Renascence; it will be completed in another volume, which we are promised will be issued within the year. The scholarship displayed in the book may be taken for granted. What is more to the present point is that the book is extremely interesting; and those will be entertained by it who have no desire to be improved.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

"Arsenobenzol und Syphilis": Neisser, *Deut. Med. Woch.*, June 30, 1910; Fischer & Hoppe, *Münch. Med. Woch.* 29, 1910; Treupel, *Deut. Med. Woch.* 30, 1910; Wechselmann u. Lange, *Ibid;* Loeb, *Münch. Med. Woch.* 30, 1910; Glück, *Ibid* 31, 1910; v Zeissl, *Wiener Kl. Woch.* 32, 1910; Neisser u. Kuzalsky, *Berl. Kl. Woch.* 32, 1910; Heerheimer, *Deut. Med. Woch.* 33, 1910; Wechselmann, *Deut. Med. Woch.*, Sept. 15, 1910; Schwabe, *Münch. Med. Woch.* 36 1910; Wechselmann, *N. Y. Med. J.*, Sept. 3, 1910.

Nothing in the medical world of to-day attracts more wide-spread

interest from physician and patient than Ehrlich's new drug, variously known as Di-oxy-amido-arseno-benzol, "Hatol" and "606." For months the German weeklies have contained references to its developing virtues, and even the lay press has not hesitated to bring them before the general public.

The production of "606" is a striking example of patient investigation and progress with a definite end in view. For years Ehrlich has spoken of the possibility of "aiming chemically" to effect a definite therapeutic result. Ever since atoxyl was first found useful in sleeping sickness by Thomas, and of a certain usefulness in syphilis by others, Ehrlich has aimed at producing a preparation of increased efficiency to destroy the spirochæta or trypanosome, and of lessened danger to the individual.

Arsacetin and arsenophenylglycin are both products of this attempt. Eighteen months ago Prof. Ehrlich was good enough to send samples of the latter drug to Montreal for investigation. The results were published in this JOURNAL, and foreshadowed very closely "606," and illustrated certain important features in the treatment of protozoan diseases by this group of arsenical preparations. One of the most important of these points is the desirability of giving the drug in large sub-toxic doses —doses large enough to destroy or seriously injure all the micro-organisms at a blow, yet not so large as to endanger the patient's life, nor any of his organs, more especially the optic nerve which proved so susceptible to arsenical poisoning in atoxyl administration. These large doses are necessary, inasmuch as small repeated doses seems to injure but a proportion of the protozoa and impart a kind of immunity to arsenic to the remainder (arsenic-fast) so that subsequent doses have no effect.

The necessity of giving large doses, yet of avoiding symptoms of poisoning, and the danger of placing a little-tried drug of unstable composition, with a complicated method of administration, in the hands of those who may be lacking in the necessary training to use it properly, are doubtless among Ehrlich's reasons for confining the present trial to a few acknowledged authorities in close touch with himself, a decision with which we must agree, even if it prove to our immediate inconvenience. The drug is to be marketed in November, so we hear, and that members among physicians and laity look anxiously forward to next month can be taken for granted.

"606" is a yellow powder, which must be kept sealed in glass capsules as it decomposes rapidly. Its composition is $C_2H_2O_2N_2As_2$ grouped as its name indicates. It is only manufactured as yet in the Royal Institute for Theurapeutics, in Frankfort, and its method of preparation is a

secret, kept so, no doubt, to prevent possible dangerous imitations and too promiscuous use.

Prof. Ehrlich has records of some 7,000 cases treated, with 6 deaths, only one of which is likely attributable to the drug. Those who have worked clinically with it include Alt, of Achtssprüng; Schreiber, of Magdeburg; Ionsen, of Russia, as well as the names appearing at the head of this review. The longest elapsed period since treatment was instituted, is said to be 11 months. Most writers began their work in April or March last. It is administered intravenously or intramuscularly or subcutaneously, and in the latter instances causes considerable pain, and in all cases some general reaction such as vomiting and temperature, shortly followed by a sensation of well-being. Nevertheless, it is well that the patient remain in bed a day or two at the time of administration.

It appears to act primarily by killing the spirochæta. Inside of 24 or 48 hours no further spirochætæ can be found in a primary sore, and the sore, erosial or sclerotic in type, has assumed a healing aspect. It is equally prompt in condylomata and mucous patches, and only less so in the roseola and secondary syphilides, the papular type lasting the longest. Tertiary ulcers and gummata heal with surprising rapidity, though, of course, where loss of substance has occurred, no *restitutio ad integram* is to be looked for. The painful lesions, bone pains and headache, of whatever stage, disappear almost like magic, while even early tabes and paresis are sensibly improved, though more advanced cases show less benefit. In malignant syphilis its powers are most evident. Cases which have resisted mercury and iodide in all their forms (mercury-fast) have yielded readily to "606."

The method of treatment adopted has been a single initial dose, and in many cases nothing more. Some cases have required a second or third dose after the lapse of a few weeks, as recurrences and cases of incomplete cure have occurred. These have generally been after a small initial dose and all have yielded to the additional injection.

The dose has steadily risen. Beginning with .1 to .3 g., as much as .7 g. or more has been given (usually .4 g.). As yet cases of heart or kidney disease have been excluded, as well as those showing changes in the eye grounds.

Not only has it proved so fatal to the spirochæta pallida, but recurrent fever and chicken spirillosis have yielded quite readily, and an occasional case of psoriasis and Lichen planus has benefited. Indeed, Hata's earliest work was confined to animal spirillosis.

As to the Wassermann reaction nothing definite can be said. A few

weeks after injection it usually becomes negative, but it may show extraordinary alteration within the first few months..

On the whole, it tends to pass from positive to negative.

Those who have worked most with "606" are, perhaps, most cautious. Neisser states, in an open letter to Ehrlich, that it is yet too early to say that "606" cures syphilis better than mercury, but that one can say that, with astonishing rapidity and power, it causes the signs and symptoms of syphilis to disappear, and that it is intensely inimical to the spirochæta pallida. "Most would do well," he concludes, to "await further experimental work as to the dose and necessity for re-injection."

"606" has not yet been tried outside Germany, though one has reason to believe that there are now small quantities in America.

Few diseases in recent years have demanded the attention of the profession of medicine to the same extent as syphilis. Metchnikoff and animal inoculation, the discovery of the spirochæta pallida by Schaudinn, the controversy and usefulness of the Wassermann reaction, and now a new therapeutic wonder have all come before us within the last 8 years. Should this last discovery make its position as firm as have even the least of the preceding, we shall indeed have cause for gratitude, not only for its manifest benefits, but for the fact that the chemistry of therapeutics could foresee and attain definite objective.

R. P. C.

OBSTETRICS.

UNDER THE CHARGE OF DRS. CAMERON, EVANS AND LITTLE.

FRANKL, O. "Experiments with Momberg's tube." *Gyn. Rundschau*, 1910, IV. 2. p. 61; also *Cent. für Gyn.*, 1910, 23, p. 789.

The difference in the anatomical relations of the aorta in man and the lower animals makes it difficult to draw definite conclusions from many experiments, particularly those on rabbits. Frankl used large dogs. Application of the tube ligatures sufficiently tightly to occlude the femoral arteries was followed by incision of veins and arteries. There was no arterial bleeding, but invariably a certain amount of venous bleeding depending on the size and extent of the vessels below the constriction, their tone, the size of the openings made in their wall (the smaller the opening the quicker the thrombosis), and finally, the coagulability of the blood.

If the tube was sufficiently tightly drawn there was never any continuous bleeding. Reported failures in obstetric practice must be ascribed to insufficient tension of the ligature, and the guide must be not disappear-

ance of the pulse, but cessation of bleeding. Incomplete occlusion will increase the bleeding. Too rapid tightening will occlude veins before arteries, and the hæmorrhage will be more extensive.

The suggested dangerous results from the procedure were never noted during the experiments, except in one instance, when there was thrombosing of the vena cava. In all cases the vessels were examined macro- and microscopically and no evidence of injury was detected. Superficial rapid respiration, with marked heightening of the diaphragm, was more notable in the animal than in the parturient with very lax abdominal walls.

Records were made of the blood pressure during the experiments. There was a slight temporary rise in pressure after application of the tube, accompanied by a smaller pulse wave, persisting so long as the tube remains in place till the tube was loosened, when the pressure fell slightly and the pulse regained its fuller character. Under ordinary circumstances, the heart being sound, there is practically no danger in compressing the aorta. It is different when there has been serious hæmorrhage, or when the heart is weak. In such cases the application of an Esmarch to each thigh enables one to open the larger vascular field gradually and not throw an overload on the heart suddenly.

Where there has been severe hæmorrhage the sudden occlusion of the vessels may cut off the blood going to the heart to such an extent that syncope may result. This may be prevented by bandaging the lower limbs before applying compression; simple elevation of the pelvis is not sufficient.

Conclusions:

1. Momberg's method (aortic compression by means of a finger-thick rubber tube) is a practical method of controlling hæmorrhage in the lower half of the body, and is especially indicated for hæmorrhage in the third stage of labour.

2. Injury to skin, nervous system, bladder, intestines, or disturbances in respiration are not to be feared. The danger of thrombosis and embolism must be considered where there is sclerosis of vessels. When the heart is affected sudden loosening of the tube is dangerous.

3. Its application causes no dangerous alterations in blood pressure to a patient who has lost but little blood and whose heart is normal.

4. Used alone, it is extremely dangerous when there is anæmia of high grade. This danger can be removed by such measures as will produce a better "blood-filling" of the upper portion of the body before the tube is applied.

Burkard (Graz) *Gynæcologische Rundschau,* 1910, IV, XVI, p. 648, in reviewing recent papers on gonorrhœa in relation to marriage and fecundity, gives prominence to the opinion of Schultz (Monatschr. für Geb. u. Gyn., XXVII, 187). Heretofore, the most extensive figures had been those of Erb, supported by Yudin, who placed the danger of transmission and effect at 14 per cent. with certainty, and 13 per cent. with probability in the more or less acute stage, and 3.98 per cent. in the chronic stage. Schultz is more optimistic. He believes that "shreds" are not a conclusive proof of infectivity, and that 90 per cent. of such patients need not be advised against marriage. The other 10 per cent. should not marry, as they are still carriers of gonococci. Clinical differentiation of the two classes is difficult but not impossible. The number of men who infect their wives is placed at 4.25 per cent. of all those *who have ever had* gonorrhœa.

H. M. L.

Ballantyne, J. W. ."The Rational Puerperium." *B. M. J.,* Jan. 1, 1910.

The author gives a very interesting review of the recent literature dealing with early rising in the puerperal period, calling attention to the interesting fact that Dr. William Goodell, of Philadelphia, in 1874, described the method of treatment followed in the Preston Retreat, with regard to early rising after labour, it being the custom to permit the patient to leave her bed the day after labour.

The author was also impressed by the fact that Kronig besides allowing the patients to rise early after labour had them carry out exercises directed toward strengthening the abdominal, gluteal and adductor muscles.

The author determined, therefore, to carry out in his puerperal patients in the Royal Maternity Hospital, at Edinburgh, during the autumn quarter, a system of bed gymnastics associated with early rising. Of 152 cases treated during the quarter, 107 carried out this regimen and were examined for muscular tone before leaving the hospital.

The so-called bed gymnastics were employed even in cases which had suffered considerable interference at the time of labour, though they were not commenced until the third or fourth day after delivery in these instances. The patients were allowed to assume the erect position earlier than usual. Forty-three rose on the 7th day, 38 on the 8th day, 19 on the 9th, 4 on the 10th, and 1 each on the 6th, 11th and 12th.

It was noticed that these patients did not experience any feeling of weakness in the limbs or dizziness such as is usually complained of.

It was noticed that this rising at the end of the first week in puer-

peral women resulted in a quickening of the pulse rate from 20 to 40 beats per minute, while at the same time the blood pressure was noted to fall from 4 to even 20 points, the change in the pulse rate being much more constant than that in the blood pressure. There was no mortality and absolutely no morbidity in the 107 cases in the subjects of these exercises. The temperature, in other words, never rose over 100° for more than one reading, and the pulse never passed 90.

The author found that displacement of the uterine organs occurred but rarely in these cases.

From his observations the author is inclined to conclude that it is permissible to reduce the period of rest after labour for the ordinary hospital patient to 8 or 9 days. Systematic bed exercises tend to keep the muscles in good tone and facilitate a return to the normal after the resumption of the erect posture. He is inclined to consider that the disturbance in the circulation evident on the assumption of the erect posture may have a recognizable effect upon the after health of the patient.

He thinks it is important that the normal cases should be distinguished from the morbid ones during puerperium, and, therefore, there are many cases in which there are contraindications to the performance of exercises in the horizontal position.

The author in these cases was in the habit of employing, besides the means already indicated, a pill containing sulphate of quinine and extract of ergot with an occasional addition of gr. ¼ or ½ of digitalis folia.

De estre, Marcel. "De la Différence de Température des Membres Inférieurs dans la Phlegmasia Alba Dolens," *Annal. de Gyn. et d'Obstet.*, January, 1910.

These observations were made at the instigation of Prof. Pinard, at his clinic in Paris.

The author first examined twenty women in order to observe the difference of temperature in both the lower limbs during the puerperal period. It was noticed that the left thigh had a superficial temperature higher than that on the right side in 15 out of the 20 cases.

The temperature usually varied between 33 and 36° C.

Observations were then made upon 9 cases of phlegmasia alba dolens, either simple or double, and it was noticed that in every case there was an elevation of temperature of the affected limb, varying from 1 to 4° above that of the healthy side. This elevation of temperature tends to attain its maximum in the early period of the development of the phlegmasia, but it may be present throughout a period of from 25 to 45 days.

Five observations are then recorded upon women in which there was a suspicion of the development of phlegmasia. In all five cases in which there was a suspicion of phlegmasia there was a difference of temperature between the limbs of less than 1° C.

Thus, the author is led to formulate the following conclusions from his observations:—

1. In the healthy woman there is a temperature variation between the two lower limbs of from 1-10° up to 1° C., but not passing this figure. The temperature usually varies between 33 and 36° C.

2. In a woman suffering from phlegmasia alba dolens, there is in the first days a difference in temperature of the lower limbs. This difference varies from 1 to 4°. In the affected limb the temperature is usually elevated above 36° C. This elevation of temperature may exist for several weeks, sometimes for several months.

3. In case of doubtful diagnosis of phlegmasia alba dolens the temperature of the lower limbs taken in the first days may permit the diagnosis of phlegmasia when the difference between the two members is shown to be over 1° for several consecutive days. This latter the author considers a constant sign, and, therefore, a valuable factor in diagnosis.

Willink, J. W. T. "Bloodless Enlargement of the Conjugata Vera." *Zeit. f. Gyn.*, No. 5, 1910.

In the Frauenklinik, at Amsterdam, the author has made use of a very simple procedure to increase the conjugata vera in labour.

With the object of bringing about marked lordosos in order to produce a condition similar to that obtained by placing the patient in the Walcher position, he placed under the patient's lumbar region, just above the glutei, a large pillow, which has the effect of raising the trunk of the body off the bed, thus leading to canting downwards and forwards of the symphysis pubis. In other words, a modified Walcher position is obtained.

Several cases are reported in which the author claims to have obtained an increase of ½ cm. in the diagonal conjugate by this means, and in which as a result the head which had been arrested at the brim of the pelvis, rapidly passed this strait with a result that spontaneous delivery took place. In several instances the fœtal head showed the impression of the promontory.

He concludes by stating that as a result of the employment of a pillow in the lumbar region as recommended, there is obtained in both primiparæ and multiparæ an increase in the conjugata vera of approximately 0.5 cm., which in many instances should lead to diminishing the length

of labour, and in a few cases may enable one to avoid resort to artificial methods of delivery.

In order that this method of treatment may be successful, one must be certain that the relationship between the pelvis and the fœtal head is such as to permit the passage of the latter, and also the pains must be powerful and frequent.

SHAUTA, FREDERIC. "Ein Wort für den klassichen Kaiserchnitt." *Monat. f. Geb. und Gyn.*, January, 1910.

The author distinguishes three periods in the history of Cæsarean section:—the first, beginning with Trautmann, extends from 1610 to 1878: the second, the short Porro period, until 1892; and the classical period since Sanger. To these three periods apparently now a fourth can be added, that of the cervical Cæsarean section.

An interesting history follows concerning the development of Cæsarean section. At first Frank and Veit recommended their extra peritoneal Cæsarean section specially for infected cases. Later, they recommended it entirely for the non-infected cases; thus it replaces the classical operation.

He then compares the relative advantages and disadvantages of the extra peritoneal and the classical Cæsarean section, generally deciding in favour of the classical operation. He dwells particularly on the difficulty of being certain that the cervical operation is carried out absolutely without injury to the peritoneum, and reports that in 65 cases recorded, in 14 instances the peritoneum was torn in the course of its detachment from the uterine wall, and in three of the cases the bladder was wounded.

The author insists that Cæsarean section should be an operation which the practical physician may be able to carry out in general practice. This, he says, does not apply to the extra peritoneal operation which requires special skill if accidents are to be averted.

The author then raises the question if the classical Cæsarean section should be replaced by the extra peritoneal or cervical Cæsarean section in all uninfected cases, how can the gap be partially filled in at this time in the attempt to save the child in cases of contracted pelves which are infected or unclean?

That extra peritoneal Cæsarean section in infected cases cannot further be employed appears, from the present state of affairs, to be pretty well established.

The primary object of Cæsarean section is the protection of the life and health of the mother. The question is then raised as to whether this indication is met by extra peritoneal Cæsarean section in uninfected cases.

Particular stress is laid on the danger of infection of the cellular tissue as an objection to the operation, several cases of this nature being recorded from the author's personal experience.

Statistics, both French, German and English, are quoted showing that the mortality in cervical Cæsarean section lies between 7.3 and 8.0 per cent., while the morbidity, according to Jeannin, runs about 30.7 per cent. The fœtal mortality runs somewhat over 8 per cent.

Shaurta's statistics for classical Cæsarean section consist of 150 cases between the years 1885 and 1900, with 4 deaths, of which one only was due to sepsis, and 150 living children.

Comparison is then made between cervical Cæsarean section, craniotomy, and hebosteotomy. He then states that all cases that have been examined with infected hands are to be excluded from any form of Cæsarean section.

He distinguishes on purely clinical grounds 3 classes of cases:—first, clean or uninfected; those which present themselves for operation before or immediately after rupture of the amniotic sac and only have been examined under strictest asceptic precautions. Second, protracted cases; such being cases in which the labour has lasted for a considerable time, and a certain amount of expulsive effort has been made, the amniotic sac having been ruptured, and cases which have been examined under doubtful conditions of asepsis. Third, unclean or infected cases: to which class is designated all cases which have been examined repeatedly, whether they have or have not fever, even those cases which at the time of observation show no evidence of manifest infection.

The author then proceeds to discuss the subject of hebosteotomy referring to the fact that it is falling into a certain amount of discredit, which he thinks is due largely to its unwise employment. After dwelling on the dangers of operation, he states his own experience in 50 cases, in all of which the mother recovered. His custom was to allow all primiparæ to deliver themselves after the bones had been separated. Three children were born dead as a result of this method of treatment, the death being undoubtedly due to delay in the second stage. He is now of the opinion that the operation of hebosteotomy is only to be undertaken in the case of multiparæ, and is to be followed by immediate delivery.

In his clinic, between 1892 and 1906, out of 5,288 cases of contracted pelves, craniotomy was performed on living children 76 times, with one maternal death.

He then discusses the indications for extra peritoneal Cæsarean section, relegating to this operation those cases which have already undergone protracted labour and escape of the waters, the so-called protracted cases

ir his classification. The operation he always combines with drainage of the cellular tissue.

He concludes by stating that in the first grade of pelvic deformity occurring in uninfected cases in primiparæ, classical Cæsarean section is the only operation indicated. In such conditions in multiparæ, besides this operation, hebosteotomy may be resorted to as a matter of choice.

In protracted cases in primiparæ, extra peritoneal Cæsarean section with drainage must be resorted to, while in multiparæ hebosteotomy is the operation of choice.

In infected cases craniotomy or delivery by means of Sellheim's abdominal fistula operation is possible.

In cases of marked deformity of the second grade, classical Cæsarean section is the operation of choice. In protracted cases extra peritoneal Cæsarean section with drainage, and in infected cases the Porro operation, total extirpation or delivery by means of Selheim's fistula operation.

The paper then concludes with a table indicating these operations in order.

ELLICE, MCDONALD, M.D. "The Duration of Pregnancy with a New Rule for its Estimation." *Amer. Jour Med. Sc.,* September, 1910.

The author discusses the duration of pregnancy, reviewing the work of Tessier, Spenser and Winckel.

It is generally granted that pregnancy may be unduly prolonged with a result of large children, though it is conceded that large children may sometimes be the result of short pregnancies. The constitution and habits seem to have some influence in bringing about a prolongation of pregnancy.

Apparently the operation of ventro-fixation of the uterus seems to tend towards the prolongation of pregnancy, and the children in these cases are reported as being unusually large. "Missed labour" is not infrequently met with in these cases. The author gives a report of ten cases of ventro-fixation selected from literature, and considers that this subject requires further study.

Issmer estimates that the size of the fœtus bears a relation, as a rule, to the duration of pregnancy. Since the attempt to estimate the duration of pregnancy by the number of days is inexact, the author considers it might be well to attempt to estimate the duration of pregnancy by the size of the fœtus, arguing if the fœtus be measured and the average size of the fœtus is known, the date of labour will be when the fœtus arrives at the average size, in the great majority of cases.

He states that he has evolved a rule depending upon the height of the fundus of the uterus above the symphysis. He states that the height

of the fundus is dependent upon the occipitococcygeal measurement of the child, and varies in direct proportion to the weight of the child, as does the length.

The rule is as follows:—

The duration of pregnancy in lunar months is equal to the height of the uterus in centimeters divided by 3.5. It depends upon the regular growth of the uterus of 3.5 cm. each month of four weeks, and is very exact after the sixth month.

The measurement is taken with the patient in the dorsal position. One end of the tape is placed at the upper border of the symphysis, while the other end is held by the thumb in the palm of the hand. The fingers of the upper hand are held at right angles to the fundus of the uterus, and the tape follows the contour of the uterus save at the last dip.

He states that this method gives satisfactory results, and is the most exact means of the estimation of the duration of pregnancy. The so-called "sinking" of the fœtus in the last two weeks of pregnancy causes but little error in the measurement.

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THREE CASES OF TUBERCULOSIS OF THE KIDNEY.

BY

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The three cases which I wish to report are of particular interest both from a diagnostic and a pathological standpoint. In the first place, these cases show how chronic the disease may be, and to how few smyptoms it may give rise. They also demonstrate how nature can at times limit the disease, and how it is that some intercurrent disease, such as a secondary infection, may be the only reason which leads the patient to consult a physician. It has been stated that symptoms referable to the bladder occur in all cases of tuberculosis of the kidney and actual lesions in advanced ones. In the cases here reported no lesions occurred, and in two of them not even symptoms of bladder disease could be discovered.

Indigo-carmine was used in all these cases as the functional test and proved of great value. It has the advantage over phloridzin that as soon as the blue appears the test is complete, whereas in the phloridzin test one has to collect five-minute specimens and then examine them for sugar. An additional advantage lies in this, that it does not involve the use of a catheter in the ureter, the presence of which may at times produce a reflex anuria, and thus give the impression of a functional inadequacy which may not actually exist. With indigo-carmine, the bladder need only be observed through the cystoscope. There is, therefore, no reflex action at work to disturb the reaction.

From a pathological standpoint the series is also of interest. To judge from the macroscopic appearance of the specimens, one would say that they were all undoubtedly tuberculous in origin. They all showed the gross evidences of caseation and infiltration of the surrounding tissues, the latter to such an extent as to simulate cartilage. Yet microscopic investigation demonstrated a decided difference between the first specimen and the other two. The first one showed the typical tuberculous lesions, namely, giant-cells, tubercles, and caseous material, while the others showed only a diffuse breaking down without any of the other signs of tuberculosis. The caseous-looking material proved to be only

a necrosis, and not a true caseation. Repeated examinations were made for tubercle bacilli, but none were found. In reference to this, mention may be made a case of miliary tuberculosis, showing the same microscopic appearances, that is, no true caseation, giant-cells, or tubercles, but numerous tubercle bacilli. This case was, however, a very acute and active condition, whereas the present ones were chronic and apparently self-limited affections. It was quite possible that the bacteria had succumbed and were disintegrated. The von Pirquet reaction was positive in both cases. Search was also made for other bacteria but without success.

Case I.—Miss M., aged 42, was admitted to the hospital, complaining of a pricking sensation in the left half of the abdomen. Her previous history was as follows: In 1907 she had an attack of grippe, accompanied by an occasional feeling of coldness in the left side of the abdomen. In February, 1909, she had another attack of grippe, which was accompanied by a pricking sensation in the left loin, and night-sweats. About the end of August, 1909, she noticed a lump in the left side of the abdomen. This was only slightly tender, and really caused her no discomfort. She had no urinary symptoms at any time.

During the past year she had lost 15 lbs.

The only important point in the family history was the fact than an aunt, on her mother's side, died of tuberculosis.

On examination, a mass was found in the left upper quadrant of the abdomen, which seemed to infiltrate the muscles of the loin. It was only slightly tender on palpation, and did not move with respiration.

The urine was normal except for an occasional blood-cell. A subcutaneous injection of tuberculin was administered which caused a rise of temperature to 99 $\frac{3}{5}$.

The leucocyte count was 10,000.

By the cystoscope, the only abnormalty which was revealed in the bladder was that the left ureteral orifice was apparently absent, a few old submucous hæmorrhages being present in the place where the opening should have been.

Indigo-carmine was injected subcutaneously and appeared in eight minutes from the right ureteral opening, but was not seen at all, that is, at the end of half an hour, from the left one.

On October 19th she was operated on by Dr. Bell.

A loin incision was made and a couple of drams of pus were evacuated from the perinephric fat space. The muscles of the loin were infiltrated, making it very difficult to reach the kidney, and when it was reached, it was seen to be simply a capsule enveloping a caseous mass of apparently

structureless material. The pedicle was tied and the whole removed. The ureter could not be separated out.

The pathological examination showed that the kidney was simply a caseous mass, separated by fibrous tuberculæ. The sections showed only fibrous tissue containing a few glomeruli in a fibrosed condition. and here and there a tubule. Typical caseation was seen, also giant-cells and tubercle bacilli.

Case II.—Mr. L., aged 24, came to the hospital complaining of pain in the right loin.

His history was as follows: About the middle of October, 1909, he awoke one morning with a feelig of pain in the right loin, which lasted only a couple of hours, and was not very severe. This occurred each morning, but at no time was it colicky in character. At this time he commenced to have slight frequency of micturition, mainly at night. Early in November, 1909, he noticed a swelling in the right loin, which was somewhat tender. He began to have night-sweats, but never had any chills. He never noticed any change in the urine. The only point in the personal history was the fact that he had had syphilis two years previously, diagnosed by a physician and well-treated.

Enquiry into his family history showed that he had one paternal uncle who died of consumption, and one sister who died of meningitis at the age of ten.

On examination, the right loin was found to be board-like, making it impossible to press between the ribs and the crest of the ilium. There was an indefinite mass in the right kidney region in front. In this situation there was no tenderness, but in the region of the 4th lumbar vertebra there was both tenderness and œdema.

The urine was normal.

The von Pirquet reaction was positive.

On cystoscopic examination the bladder was found to be normal, save for a slight congestion around the right ureteral orifice. Ureteral catheterization showed the left kidney to be secreting normal urine, whereas the right kidney was not secreting at all. Indigo-carmine was injected subcutaneously, and appeared on the left side in 13 minutes. It did not appear on the right side at all, that is, at the end of 25 minutes.

On December 9th, 1909, he was operated on by Dr. Bell.

A loin incision was made and the whole of the musculature on that side was found to be infiltrated and to cut like cartilage. In the region of the fatty capsule thick caseous pus was found. Only a small piece of kidney tissue was found, the remainder being destroyed. This was clamped and cut away, the clamps being left on as it was impossible to tie anything on account of the infiltration.

The pathological examination showed that there were present small portions of kidney tissue with some infiltrated muscle, and some caseous-looking material. The kidney showed nodules which were white in colour, and about the size of a split pea. On section these nodules were seen to contain a creamy-yellow material, which was firm enough in consistence to be scraped out. The sections showed a fibrous tissue stroma containing blood-vessels, around which were collections of lymphocytes. There were also seen some proliferative changes in the blood-vessels. There were no giant-cells nor definite tubercles seen, neither were there any areas of true caseation made out. In the sections of the kidney it was seen that the whole of its structure was distorted by an invasion of fibrous tissue. The glomeruli were surrounded by dense fibrous tissue, and the tubules, which were few in number, were shrunken and small. There was a diffuse infiltration by white cells of varying kinds, of which mononuclears predominated. Here and there the cell infiltration was darker, whilst in other places the admixture of varying types of cells gave rise to the appearance of granulation tissue. Some of these areas of loose tissue were delimited by fairly well defined fibrous bands. The vascular spaces were small but numerous. The larger vessels showed thickening of their walls. Plasma cells were seen throughout the tissue, and many fibroblasts were visible amongst them. The fibrous areas showed a strikingly diffuse permeation of the kidney relics by white fibrous tissue, and cell-aggregations were here scarce. Tubercle bacilli were not found.

It is clear that the evidence in this case, for or against tuberculosis, is conflicting. While it is almost out of the question to consider tuberculosis as a diagnosis when the typical systems of giant-cells are absent, or above all when no giant-cells occur, yet it is equally certain that cases have been described as tuberculous in which there was little more basis, microscopically, than in this case; and tuberculosis in the cow of the chronic type, affords exactly similar appearances to those here described. The only problem lies in the question of the possibility of this case being syphilitic in origin. In a syphilitic mass one would expect to see little more than occurs in this case; there would be the irregular cell-aggregations without any arrangement suggestive of a tubercle, and there might be no giant-cells. Plasma cells, occurring in large proportions, would also be a feature of a syphilitic lesion. On the other hand one would not expect to find such a diffuse change as occurs here, and one would expect to find a more localized gummatous mass with arrangement of cells at its edge. The present specimen shows numerous masses of granulation tissue with a very thin fibrous tissue

envelope. It is a question whether a diffuse chronic interstitial syphilitic nephritis, such as was present in this case, can occur as soon as two years after the primary lesion.

Case III.—Miss R., aged 28, came to the hospital complaining of pain in the right side of the abdomen, headache, general malaise, and fever. On November 14th she was seized with severe pain in the right side of the chest. This was accompanied by cough and some huskiness of the voice, also slight fever. In a few days her condition became much better, and she was able to do her work again. This pain was not accompanied by nausea or vomiting. On November 25th she was seized with severe pain in the right side of the abdomen just below the costal margin. Her temperature registered 101, and she felt chilly, but there was no nausea or vomiting. On admission, a mass was discovered in the right side of the abdomen, it was somewhat tender when pressure was exerted in the loin. She had no urinary symptoms at any time.

The only point in the family history of interest was the fact that her mother had lupus of the face.

The urine was normal.

The von Pirquet reaction was positive.

On cystoscopic examination the bladder was found to be normal, save for some congestion around the right ureteral orifice. The left orifice was normal.

The ureters were catheterized, and it was found that no urine was coming from the right kidney, whereas normal urine was coming from the left one. Indigo-carmine was injected, subcutaneously, and appeared in 9 minutes from the left ureteral orifice. but did not appear at the end of 45 minutes from the right one.

On December 15 the patient was operated on by Dr. Bell.

The usual loin incision was made and the kidney was found to be enlarged. At the lower pole a mass of inflammatory tissue was found infiltrating the muscles and the ureter. This mass was connected with the lower pole of the kidney. On cutting into it a thick caseaus pus came away. The ureter was found to be completely occluded at this point, therefore, the kidney was removed. The perirenal fat, the sheath of the psoas, and the peritoneum were all infiltrated.

On macroscopic exaimnation, the kidney showed, at the lower pole, a reddened and scarred area, corresponding to the infiltration in the tissue around.

On section, a mass ¾ of an inch in diameter was seen in the lower pole. corresponding to the reddened area on the surface. and containing a yellow, caseous material. Nowhere else in the kidney were similar nodules visible. The sections of the kidney mass showed that the kidney

structure was much altered. In parts the kidney was not recognized. The whole tissue was permeated by a fine network of connective tissue, with here and there islands of a more dense cellular infiltration. This infiltration consisted mainly of lymphocytes with newly developing connective tissue cells. The tubules had for the most part been destroyed and the glomeruli reduced. Several arteries with the intima much thickened were seen. No definite giant-cells were seen, and tubercle formation was wanting. Caseation was not present, but œdematous granulation tissue was seen in areas. This granulation tissue contained chiefly lymphocytes, but plasma cells were by no means inconspicuous, and a few eosinophyles were met with. The tissue in the immediate vicinity of the macroscopically caseous areas was found to consist of very dense but young fibrous tissue, which was everywhere diffusely infiltrated with round-cells of the usual chronic inflammatory type. Plasma cells were also met with. This fibrous portion was continuous with the dense fibrous tissue which occurred about the kidney. The central parts of the caseous-looking mass were hyaline, and the number of cells was decidedly small. New capillaries were numerous, not only in the vicinity of the caseous mass but in the granulation tissue abutting on the renal tissue. In the more healthy parts of the kidney the tubules were large, and showed some erosion and degeneration of the cells. True tubules were not present, and tubercle bacilli could not be found. Gram's method was also used, but no organisms could be found. In this case, again, the evidence for or against tuberculosis is conflicting, and we are again struck with the fact of giant-cell systems being wanting from a tissue which to all appearances is tuberculous and not syphilitic. The fact of the appearance of inflammatory cell-aggregations, like those of the preceding case, with the occurrence of fibrous tissue as a capsule around them, is very instructive, because here we have a case in which there is not the remotest suspicion of a syphilitic infection either recent or congenital, and yet the appearance of many parts of the tissue is almost identical with those of the preceding case. The only essential difference is that this third case presents much more fibrous tissue, and that the fibrous tissue is rather more localized in distribution. There seems no choice but to accept this case as a tuberculous one, so that the second one can be put into the same category in view of the difficulties of accepting it as syphilitic,—difficulties already sufficiently discussed.

It requires no specially detailed discussion to bring out the intricacies and peculiarities of these cases; and it is evident that they each present rather unusual features. In each case the diagnosis was difficult, and indeed in only the first case is there even now any certainty that the

lesions found were tuberculous in nature. The other two cases are very unusual in this respect, yet it would be difficult to believe that they were of any other origin, considering the clinical history, hard as it is to be dogmatic on those points.

In any case the macroscopic appearances of the specimens were sufficiently remarkable, and it came as a great surprise that more definite microscopic evidence of tuberculosis was not forthcoming.

In all these cases the value of indigo-carmine as a diagnostic agent was clearly shown. One does not need to enlarge on the value of the cystoscope or the ureteral catheter in all obscure abdominal conditions, especially those in the neighbourhood of the kidney, as so much has been written of late on that subject.

THE TREATMENT OF TABES DORSALIS.

BY

TOM A. WILLIAMS, M.B.C.M., Edin.

Were one to accept the dystrophic theory of the pathogenesis of tabes dorsalis, there could be little hope of effective treatment. The evidence against this view increases daily,* however: and the majority of us strongly believe that tabes is merely a consequence of syphilis of the spinal roots and their cranial homologues (Nageotte.) Against the view that it is a parasyphilitic or other dystrophy is: (1) the vastly greater degeneration of the root between radicular zone and spinal cord, as compared with the amount between intervertebral ganglion and radicular zone; (2) the meningitis always present, evidenced during life by lymphocytosis and post mortem by granulomata, or their cicatricial results, which a microscopic examination always reveals.

But the strongest argument in favour of the inflammatory theory is the demonstration of the active focus in the radicular zone, both of the anterior and posterior root, or in the presence of regenerated nerve fibres distal to this. Is it conceivable that regeneration can occur in a dystrophic disease?

Moreover, not only are sensory protoneurones implicated, in the syphilitic exudate, but also the sympathetic (Roux) and motor systems which pass through the spinal roots. Why, then, have so many neurologists disbelieved in the efficacy of antiluetic remedies against tabes?

In the first place, the iodides have been too much relied upon, on account of the notion that they are the remedies of choice against tertiary lesions, and hence are *a fortiori* against so late a result as tabes.

Int. Clin., Spring, 1910; Med. Record, 5 Feb., 1910.

* See author's articles in Amer. Jour. Med. Sci., Aug., 1908, Mar., 1910;

Recent work, especially in France, has shown syphilogrophers the subsidiary place of the iodides even in tertiary disease, and that mercury is the only truly specific remedy in every stage.

Why, then, has mercury failed to benefit countless tabetics? I believe on account of its administration by the mouth, by which means it is not possible, without disturbing assimilation, to saturate the system to the point where an adequate dose of mercury can reach a part of such comparatively low vascularity as the meningeal envelopes of the spinal roots. Besides, in many tabetics nutrition is poor; and this must be compensated to combat granulomatous disease, a result not conduced to by intense mercurialization. The inunction method is uncertain, inconvenient, and perhaps interferes with cutaneous elimination.

The method of choice in most cases seems to be intra-muscular injections. As I have most experience wth the soluble salts, I adduce a few cases in which the pathogen of tabes is attacked in this way with enormous benefit to the patient.

Case I.—Man, aged 40, referred May, 1903, by Dr. Lewis L. Taylor, of Washington, for severe "nervous breakdown," following "indigestion" for five years.

Previous History.—Moderate smoker, and rarely took alcohol, had given up coffee. Eats well. Single from choice. No sexual excesses. Infected twenty years before. Since nine years, felt useless and depressed, almost wanted to die. Attacks of desperate desire to flee. Since two years, dyspnœic and sinking feelings occurring suddenly without external cause, light feelings in the chest, thumpings in the heart. Nervous chills, with tremor, crying spells, voice tremulous and uncertain. For a year and a half, had given up his bank, and taken up out-of-doors soliciting; since when he had gained ten pounds.

Examination.—Foul breath, thickly furred tongue; circulation, respiration, urination, normal.

Nervous System.—Deep reflexes all exaggerated; the triceps, patellar, Achilles and deltoid were unequal on the two sides. The cutaneous reflexes were diminished, including the plantar. The pupils reacted normally.

Motility was deficient in the left forehead; trembling of left cheek and tongue and right fingers. Adduction of right thigh was imperfect. The left heel left the floor while he sat up from recumbency.

Sensibility unimpaired.

Psychic Functions.—Memory not impaired. Perception clear, calculation slow and imperfect. Not a tabetic; but in pretabetic stage of chronic meningeal irritation.

Treatment.—He was given a mercurial course during seven weeks, when he went to the mountains, with all the symptoms vastly improved and able to do office work without tire or irritability.

In October, a second course was given, and he could now stand the pain of mercurial cream injections once a week. He has since then remained well. I should add that a very careful regime and restriction of the proteids in the food were instituted.

Case II.—Man, age 54, seen with Drs. Prentiss and Main, of Washington, on account of a "neurasthenic state" since six months, which rest, change and a sea voyage had benefited only slightly and temporarily. His complaints were insomnia, irritability, and a state of suffering and incapacity. He has no children. Has been subject to hardly noticed depressions and exaltations every few years.

Examination.—In spite of the cold, an abundant sudorrhœa of both axillæ and the internal borders of the left arm, less abundant on the left leg.

Motility was strong. There was no tremor of tongue or face or eye, but the right platysma trembles, and there was a rhythmical tremor of the arm.

Sensibility.—A zone cirresponding to fifth lumbar and first sacral roots was insensible to vibrations.

Reflexes were uneven, that of the right knee being diminished, the abdomen almost absent, as was the right plantar. The pupils were irregular, and the light reflex was imperfectly maintained. The speech was slightly drawling, and a word or letter was occasionally stuttered over.

Psychic Examination.—Memory was slightly below normal. Calcution was slightly imperfect. During the first examination his insight seemed impaired, as he was quite indifferent. He declared that his lack of interest ensues upon peculiar abdominal feelings like the sensation after a debauch, followed by a sinking feeling and misery.

Treatment.—He was at once given mercurial injections, and a few days later the examination was continued and showed him to be incapable of detecting the glaring impossibilities depicted in some drawings I used for the purpose.

His steady improvement was interrupted only once by an error of diet. After five months of hard work on the farm, he began to feel nervous again, but another course of mercury arrested the symptoms. Six months later some unusually hard work caused another relapse, but I believe that a short rest will fully compensate this. (See International Clinics, 1909, for full report of first two cases.)

Case III.—It is one of a pretabetic invasion, characterized for four

years by paroxysmal twinges of darting and deep pain, chiefly in the lower limbs, also pin pricks in the scalp and intercostal pains with cold feelings in legs, and occasional hot flushes. Symptoms lasted for a few days every week or so. Attacks of burning at the neck of the bladder, with imperious desire to urinate, were particularly troublesome. The patient had consulted several English neurologists, who inclined to attribute his symptoms to fear, for they found no objective signs, although he had contracted syphilis nine years before. Diarrhœa and depression had prevented him taking mercury by the mouth. A four months course of inunction, when the pains began, five years after the chancre, had produced no improvement.*

Treatment directed to the bladder produced no improvement. Treatment by vaccines for two years was inefficacious.

I urged the patient, who was a medical man, to take a course of injections, and have the cerebro-spinal fluid examined. The lumbar puncture showed an apparently normal fluid, but produced severe vomiting and vertigo.

However, the patient injected a twelfth of a grain of perchloride of mercury every other day, and soon doubled the dose. In a few months the pains had practically disappeared, although he continued working hard, and he now has been free for six months, with only an occasional reminder. He writes: "It has made me a different man, and changed me from self-absorption into a normal being; not that I showed it outwardly I hope; but, perhaps, you cannot imagine, not having experienced it, the difference it makes to one's life having a constant shadow like that unexpectedly removed."

A purin free diet, particularly at night, was recommended, and the very observant patient considers this almost as important as the injections. He found that late dinner was particularly apt to bring return of the pains.

In all cases it is of the greatest importance to prescribe regular physical exercise of a brisk kind, and periods of rest in the more aggravated cases. And regulation of the diet is of extreme importance. Twice, weekly, I prescribed a hot bath of about half an hour's duration, and do not permit it to be followed by the usual cold shower. I believe that in this way the kidney is preserved from the untoward effects of the mercury. Two months is, perhaps, long enough for an uninterrupted course of injection. If symptoms persist, then another course should commence after two weeks of recuperation from mercurialization.

* See also author. Treatment of Parasyphilis of Nervous System (Med Press and Circular, London, 1910.

I believe that the kind of treatment, thus broadly outlined, will enable us in the future to arrest or control the majority of cases of tabes dorsalis, more especially in the earlier stages, the diagnosis of which neurological technique makes possible. Even in later stages hope need not be given up, as some remarkable cases could attest did space permit. This is a great step in advance, and if the results of the new organic arsenical (dioxydiamidoarsenobenzol preparation) recently discovered by Ehrlich are confirmed, we shall have still more rapid control over the pathogenisis of tabes dorsalis, a quondam despair of medicine.

TWO CASES OF SARCOMA OF THE CHOROID.

BY

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Pathological Report by Fred. T. Tooke, B.A., M.D., Montreal, Que.

The insidious nature of the onset of malignant processes which invade the human organism is a truism, the importance of which it is useless for me to emphasize. In a highly vascular organ as the eyes, choroidal sarcomata are by no means rare, and by means of the opthalmoscope may frequently be observed or detected early in their formation. Many patients, either from ignorance or what cannot be termed anything else than stubbornness, delay to such an extent that the consultant is at a loss to differentiate the tumour from a number of complicating sequelæ, symptoms which completely mask the detection of the original intraocular neoplasm. I have recently seen two cases which largely bear out this assertion, one of which is of added interest due to a careful pathological examination.

Case I.—J. W., a male aged 50, was first seen by me in January, 1908. He stated that up to two weeks previous his eyes had been normal. Since that time, he noticed a mist before his sight, and when he closed his left eye, he saw only the upper half of objects. The eye was free from pain, and there was no external evidence of ocular disorder. The pupil of the right eye, the one complained of, was larger than that of the left, it reacted to light; the cornea, aqueous, and lens were clear. Vision was reduced 20/40, while the tension was + 2. Upon examining the patient with the ophthalmoscope, I found the upper half of the retina to be detached and floating in the vitreous. In six weeks time he again presented himself for examination, when I noted a complete separation of the retina with total loss of vision. The patient was then lost sight of for a period of six months, after which lapse of time he again came to me complaining of excrutiating pain in the right eye,

which presented all the classical signs of an acute glaucoma. On account of the extreme pain, and as the eye was a sightless one, at the same time anticipating an intra-ocular neoplasm, I removed the eye. After removal, there was no evidence of extra-ocular extension, and when the globe was sectioned a dark coloured tumour of about the size of a small filbert was seen adherent to the choroid. Its position was upwards and to the temporal side, about 5 mm. from the optic disc.

The pathologist, to whom I sent the specimen, informed me that the tumour was a melano-sarcoma, but gave me no particulars in regard to its microscopic appearances. As the material had been misplaced or gone astray, he was unable to furnish me with further particulars, a fact which I regret, and one which associates an element of incompleteness to the report of this case. The patient was never seen by me after he left the hospital, and I only recently learned that he died one year following his operation from malignant disease of the liver, no doubt a metastasis of the original tumour.

Case II.—S. K., female, aged 81, consulted me for the first time in March, 1910, complaining of severe pain in the left eye. She stated that three years previous she noticed for a few minutes all objects appeared red. This was followed in a few hours by redness of the globe, swelling of the lids and pulsating pain in the eyeball. No treatment was adopted, and the pain and swelling subsided in three days. She then noticed that her vision was less than before this attack, but she was still able to use her eye for reading. The eye of the opposite side had been blind for several years as the result of an injury. During the following three years the patient experienced five or six attacks similar to the one I have just described, each lasting for about three days; but in the interval between the attacks the eye was absolutely free from pain. Vision, was, however, diminishing, and for the past twelve months she had been unable to read. On examining the eye for the first time, the lids were very edœmatous, with chemosis of the conjunctiva and injection of the cornea. The pupil was moderately contracted and fixed. The anterior chamber was rather deep, no view of the fundus could be obtained, due to a cataractous lens, light perception was absent, and tension was + 2. An enucleation was performed the following day, when no adhesions of the globe to the structures in or about the orbit could be determined. At the posterior pole of the eye the sclera was very thin, and a mass could be distinctly felt through it. On sectioning the globe the lens was seen to be opaque, and the retina was practically completely detached, being fixed only at the optic disc. Springing from the choroid, which was not detached, was a rather soft, pale

tumour; its base measured 9 mm. in diameter, and to it a globular head measuring 5 mm. was attached by a narrow neck or pedicle measuring 2 mm. in length. The wound healed readily without complications, and seven months following operation the patient reported herself in good health. The microscopic examination made by Dr. Fred. Tooke, Ophthalmic Pathologist to the Royal Victoria Hospital, Montreal, whom I wish to thank for the careful manner in which he has prepared the specimen, is appended.

"The specimen supplied is that of a globe which has been slightly macerated in the process of bisection, mostly manifested by a small oblique tear of the cornea. The contour of the eyeball has, however, been maintained, and, extrinsically, the globe shows no further pathological manifestation. The intraocular chambers are apparently void of anything suggesting pus or blood, the iris is in position, and no mascrscopic indications of adhsions can be determined. Within the vitreous chamber the retina is seen detached from all points except at the papilla, and it is folded upon itself as a grey lustreless membrane. In the posterior half of the eye, beneath the retina, one sees a new growth, which lies obliquely, extending to within 2 mm. of the point where the retina is fixed to the globe from a point about midway in the circumference of the globe. This tumour is about the size and shape of a shelled almond, and is of a light gray colour, except posteriorly and to one side, where it is distinctly pink tinged. The tumour mass can scarcely be described as soft, nor, on the other hand, is it as firm as one expects to find in tumours of the sarcoma group. The specimen was fixed in formalin, hardened in progressive strengths of alcohol, and imbedded and cut in celloidin; the stains employed have been Hæmatoxylin and Eosin, and Van Giesen's stain.

"Microscopically one sees in the conjunctiva bulbi at its corneo-scleral attachment, a very moderate degree of infiltration of mononuclear leucocytes, the vessels are somewhat dilated, and the connective tissue cells swollen, presenting an œdematous appearance. An exfoliation of the superficial corneal epithelium is manifest; this has no doubt, been mechanical as the substantia propria of the cornea is clear throughout. Bowman's and Descemet's membranes have been unimpaired. One filtration angle is slightly distended, and the adjacent canal of Schlem shows evidence of slight infiltration along its course. The anterior chamber is clear with the exception of a few endothelial cells which occupy the filtration angle just referred to. Scarcely any evidence of an iritis is to be made out: all that one notes is a rather abundant supply of lymphocytes with a slight dissemination of the uveal pigment in the iris stroma. There are no blood cells in the anterior chamber, and nothing

suggestive of synechiæ can be determined; the lens is absent, doubtless having been dislocated when the globe was sectioned. The ciliary bodies show the same degree of slght infiltration as the iris, but absolutely no evidence of exudate can be made out extending from them into the vitreous cavity. The sclera is clear and unbroken throughout. The retina is completely detached along its whole length, and is folded upon itself a number of times, doubtless pushed out of position by the large neoplasm lying in front of it. The course and position of the retina is so distorted and irregular that its usual histological features are distinguished with difficulty. The membrane is at least atrophic in respect to the layers of rods and cones and of the ganglion cell layer, large vacuolated spaces suggestive of œdematous change occupying most of this area, other points showing a moderate degree of infiltration. The choroid follows the contour of the globe fairly closely although it is separated from it at a number of points. The choroidal pigment is generally disseminated throughout the stroma which is œdematous, the blood vessels are widely dilated, but for the most part are not occupied by blood corpuscles. The pigment cells underlying the membrane of Bruch are somewhat swollen, but "Drusen" or colloid bodies are absent. The arteries throughout the uveal track show but a moderate degree of thickening, while throughout its whole course there is practically no evidence of hæmorrhage between that membrane and the separated retina; certainly nothing of recent origin.

"The tumour mass proper springs from a small pedicle of the choroid. which is firmly attached to the sclera. This pedicle consists of a dense network of choroidal stroma in which is intermingled coarsely disintegrated pigment cells as well as a number of round cells which have deeply staining nuclei. A few spindle cells are also present, and a number of these, with some of the rounded variety, can be made out under high power in the innermost layers of the sclera adjoining the pedicle or base of the tumour. The precise characteristics of the sarcoma cells occupying the pedicle of the mass are difficult to define. On examing the tumour under high power, well within the vitreous cavity, its composition of round and spindle cells, closely massed together, can readily be determinel; the former variety are much more numerous than the latter which are aggregated into little groups or clusters. The nuclei take the stain much more densely than those of other tissue cells throughout the section, while the cytoplasm is well stained with fuchsin. A number of large blood vessels are seen to be tremendously dilated with orythrocytes, and these at a number of points have broken down into the sarcomatous tissue. In this exudate of red blood corpuscles one

may detect an unusually large number of polymorphonuclear leucocytes, as well as several large and small mononuclears and a few eosinophiles. At one point in particular, where these lymphocytes are unusually abundant, not only within the exduate but also along the vessel walls, some evidence of early necrosis is apparent. Except at the point of origin of the tumour, where melanin is abundant, the tumour might almost be regarded as a leuco-sarcoma; however, under high power, fine pigment cells may be made out in a few places, which substantiate the diagnosis of melanotic sarcoma of the choroid."

SHOULD ECLAMPTIC MOTHERS NURSE THEIR NEWBORN

BY

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Within the last few years several pathetic cases have come under my notice, the sincere consideration of which has led me to endeavour to find a satisfactory answer to the title of this paper, Should eclamptic mothers nurse their newborn?

The question considered from the point of view of the interests of the child is a new one, one upon which nothing has been written, and upon which little if any discussion at all has taken place.

My cases are three in number, where healthy infants, or seemingly healthy infants, evinced no signs whatsoever of disease until the first copious nursing, when they suddenly died without apparent cause. These children died a death so similar in its antecedents that we are compelled to think that their exitus was from a common cause. They were well, even in vigorous health, until two hours after a copious nursing, and they were so insidiously and rapidly taken ill, that it was easy to see that there was no chance of recovery, even though seen in the early stage of the onset.

Let me describe the cases in full, and later consider some of the broader questions dealing with the effects of eclampsia upon both the mother and her offspring. I am writing of these cases, not in the spirit of the man, who feels that when he has completed his report, the last word will have been said upon so weighty a matter, but rather, in the spirit of the man, who seeks after knowledge, with an open mind, hoping that his lines may draw forth evidence from other sources either to corroborate or to refute his conclusions.

The first case was a near relative, a young woman of 35 years, mother

of three children, and a more healthy specimen of womanhood one seldom sees. She was delivered at full term of a strong, healthy infant, which cried lustily immediately after birth. According to the physician's statement, and this is fully corroborated by statements of near relatives, the patient had shown no signs of eclamptism either before or after delivery. The labour was easy and free from instrumentation. I happened to be on a visit to Ottawa at the time, and called to see her on the second day after delivery. She looked remarkably well, and seemed in the best of spirits except for a slight headache. The child was a strong, vigorous, well-nourished baby of eight and a half pounds. To my very great surprise, I was summoned to Ottawa on the following morning to find the mother in the coma of eclampsia. She had gone to sleep at 10 o'clock on the previous evening, and the nurse slept on a lounge in the same room. At seven o'clock the nurse was awakened by the bumping of the head of the bed against the wall. Her patient was in a convulsive seizure. Convulsion followed upon convulsion in rapidly decreasing intervals. I arrived in Ottawa on the noon train, to find the patient in a deep coma from which she died without rallying, except for a few moments when she made sign for writing material to let her husband know her wishes, which she could not speak. She gradually sank and died that night at eight o'clock from respiratory failure during a seizure.

The child had nursed for the last time at five o'clock that morning. During the night the breasts had filled up rapidly, and it was the first successful nursing that the child had had.

At 10 o'clock the nurse looked at the child to find it blue at the finger tips and nails, and cold about the ears and feet. Previous to this, owing to excitement over the mother's condition, the child had been overlooked. At noon, upon my arrival, the child was cold and cyanosed about the extremities, respirations were irregular and shallow. Somnolence was very pronounced, and seemed to amount almost to coma. The pulse was slow and full. The abdomen was slightly distended. There were slight muscular twitchings of the face and rigidity of the extremities. At 4 o'clock the abdomen became markedly distended and tense like a drum membrane. The cyanosis had spread to involve the cheeks and neck, the eyes were closed, and the lips a dark livid colour. Respirations were very slow and shallow, though very variable like a Cheyne-Stokes respiration. Careful examination, now and previously, did not help to clear up the diagnosis. The respirations grew more shallow and slower, and the cyanosis gradually spread and deepened; the abdomen became still more distended in spite of all measures

adopted. At 6 o'clock respirations gradually ceased and the cyanosis became intense; slight convulsive seizures had preceded the cessation of respiration. Upon my being summoned, I found the heart still vigorously beating, and by means of artificial respiration the cyanosis was gradually relieved, but respiration could not be established. After fully twenty minutes of artificial breathing the pulse could still be detected in the radials.

The second case is very similar in the main, though differing somewhat in several particulars.

Case II is that of a young woman of 28 years. She had had albuminuria and casts during the last month of pregnancy, and in the last week antepartum had suffered a very great deal from occipital headache and epigastric pain. Her labour was easy and not very long. The above symptoms continued for the first day after labour, and thirty-two hours after delivery she had her first convulsive seizure. Three convulsions followed in as many half hours, and then she slowly recovered. The child had been nursing previous to the seizures, and nursing was continued afterwards. It received no satisfaction at the breasts until the morning of the third day, when the child had a full nursing and it ceased to cry. Six hours later its hands and feet were cyanosed and cold, and its lips were blue. Respirations were shallow and slow. The child was somnolent, and there were muscular twitchings with occasional nystagmus. Careful examination failed to reveal anything in the several systems. The respirations grew shallower and slower until they finally ceased and the cyanosis grew progressively deeper. Distension was well-marked,—in fact, both cases were so similar in every respect that I was roused to find a common cause.

Case III is of more recent date. Mrs. S.., a strong healthy woman in her third pregnancy, suffered from albuminuria during the last two months of her pregnant state. She was in the seventh month when I first saw her. My examination at that time revealed a markedly accentuated aortic second sound and a marked hydramnios. I at once suspected renal insufficiency, and upon analysis found four grammes of albumin to the litre. On a strictly milk diet she improved a great deal, both as to her hydramnios and as to her great discomfort when lying down, owing to dyspnœa. The albumin fell somewhat in amount, but the quantity of urine, though of low specific gravity, was always large. However, the improvement was only temporary, for soon the albumin rose from 3 grammes to 7.5, and later to 10 grammes.

Singularly enough, the symptoms apart from those caused by the hydramnios, were almost negligible. There was a very slight œdema

of the ankles and of the region of the hypogastrium as is so frequently found in hydramnios. She never had headache or vomiting.

Labour came on on December 26th, ten days before the calculated time. The membranes ruptured almost with the first pains, but the labour progressed rapidly and easily. During the second stage, the patient's eyelids twitched, the right side of the face had slight convulsive attacks, and twice, when the pains were on, the eyes turned to the left and became fixed, and respiration became somewhat jerky. However, though sailing close to the wind, she escaped without accident.

On the second day, the mother complained of loss of appetite and severe headache. The bowels had moved and moved freely, but the urine was still loaded with casts and albumin and bile, and there was œdema of the eyelids. There was slight jaundice. On the morning of the third day the patient seemed a great deal better, and as I entered the room she said that the baby had been ravenous previously, but that she had felt the milk pouring into her breasts during the night, and it had had a good nursing, but it would not nurse the second time, it seemed so drowsy. She asked me to have a look at it to see that it was all right. As I passed out of the room the nurse said, "I think the baby is sick." A glance was sufficient. The same clinical picture was before me; duskiness, cold extremities, blue nose, shallow, irregular respirations, and muscular rigidity from time to time in the lower extremities. A careful examination threw no light upon the diagnosis. At 6 o'clock that night I was told to come at once. The father met me in the hall and said that "it was all over with the baby." The child had been dead some minutes judging from what was told me. It had been laid out in a child's cot in the nursery and was covered with a white sheet. All this had been done deliberately after the supposed death. When I raised the sheet the face and neck were almost as black as ink, but the pulse was still readily palpable at the wrist. I am not prepared to say how much time had elapsed between the "death" of the child and my arrival, but I simply cite the facts and leave my readers to judge for themselves. I took the child to the grate fire and began artificial respiration, so that the cyanosis diminished rapidly. I continued the manœuvre for about 15 minutes and at that time, though the radial pulse was not palpable, the cardiac sounds were audible with the stethoscope. The respirations, could not be re-established, and death followed after one half hour's effort at resuscitation.

The albumin persisted for a long time in large quantities in the

mother's urine, and was not entirely absent until six months after delivery.

Such are the histories of my cases. The casual reading, not to say the careful study of them, will, I think, leave every thinking practitioner with the questions in his mind, Was there any connexion between the nursing and the incidence of the sudden change in the child's health? What was the nature of this illness? Is an eclamptic mother's milk toxic? If toxic, why to her own child, which was nourished from her own blood? Were these children healthy or only seemingly healthy before the onset of such startling symptoms? Are children, born of eclamptics, healthy children? Can mothers' milk secrete a condensed, or accumulative toxin more virulent than that which she has circulating in her blood? In a word, should eclamptic mothers nurse their newborn babies?

I have made a complete review of the literature in the hope of finding analagous cases, but as fruit of my labour, I found but one well authenticated case. But the search has been replete with interest, and has thrown a great deal of light upon these rather obscure questions.

Let me begin by answering the question, *Are children born of eclamptic mothers healthy at the time of their birth?* A great deal of literature upon the subject proves, conclusively, that they are far from being healthy. Von Winckel, in 1893, was the first to lay stress upon the necessity of performing autopsies upon children born of eclamptic mothers. Since then, many authors have given their attention to this side of eclampsia with the results that have been far reaching. Bar and Guyiesse found that in 17 children born of eclamptic mothers, in all cases there were signs of general intoxication, and in a large percentage the lesions were identical with those of eclamptic mothers, who had succumbed to the disease.

Schmorl autopsied six children born of eclamptic mothers, and in four cases found advanced degeneration of the kidneys and hæmorrhages in the liver in all six of them. Lubarsch examined five such children and found advanced renal and hepatic lesions in all of them. Prutz found in the kidneys of a child of an eclamptic. cellular degeneration of the renal tubules with cellular and hyaline casts in their lumen. Similar results are recorded by Chamberlent, Knapp, Dienst. and Williams.

Moreover, there are on record not a few cases where the infant, born of an eclamptic mother or of a mother, who presented all the signs of eclamptism, developed true eclamptic seizures within the

first three days after birth. Some of these succumbed, others survived. Schmid published one such case in which convulsions occurred shortly after birth. The autopsy showed all the organs to be affected similarly to those of eclamptic women. The kidneys were particularly affected, showing marked degeneration and associated with albuminuria and hæmaturia. Wilke wrote of a case in which typical eclamptic seizures came on after birth, and the autopsy revealed a toxic encephalitis. Similar cases have been described by Moraweck, Wendt, Woyer, Nicarelli, Pels-Leusden and Winkler. Knapp held an autopsy on mother and child and found the same pathological changes in both.

It is also interesting to note that Schmid found albuminuria in the case of a child, which died of eclampsia. This was corroborated by Eskelin, who found blood and casts and albumin five times in as many cases born of eclamptic mothers. Similar results have been described by Audebert and Arnozan.

Dienst's exhaustive monograph deals with seven cases of eclampsia or threatened eclampsia in the mother, and with either signs of advanced nephritis or with true eclamptic seizures in their offspring. His first case was 22 years of age. She had one eclamptic seizure immediately after delivery, and then made an uninterrupted recovery. The child had its first convulsion seven minutes after birth. Others succeeded rapidly, and it died of respiratory failure. The breathing grew slow, irregular and very shallow, and cyanosis was well-marked. Deep somnolence was a feature. The heart's action was still strong after the respiration had ceased, and artificial respiration was kept up for quite a while. Autopsy showed signs of acute nephritis, and the condition of the liver was typical of eclampsia, viz., focal necrosis, thrombosis, with congestion and hæmorrhages.

In the second case, mother and child succumbed after Cæsarean section. The child was living when operation was begun, but when removed was perfectly rigid in all its body and extremities. It evidently had died in a convulsive seizure in utero. The pathological findings were similar in both mother and child. The urine was drawn from the child's bladder by means of a soft catheter, immediately after it was delivered from the uterus, and it was found to be the urine of acute nephritis. It contained 10 grammes of albumin to the litre, numerous red blood cells, few leucocytes and casts of all kinds.

Case III.—Eclamptic mother died after Cæsarean section. Her child survived. The urine collected from the infant showed hæmaturia and albumin for three days. The albumin disappeared on the 5th day and the child gained slowly.

Case IV.—Eclamptic mother died, survived by her infant. The urine collected from the child showed a large amount of blood, albumin and leucocytes, hyaline and blood casts. The urine was free from albumin for the first time on the eighteenth day after birth.

Case V.—The mother died in eclamptic seizure. Her child had light convulsive seizures during the first five hours after delivery.

Case VI.—Eclamptic mother gave birth to twins. The mother had but one convulsion and recovered. The twins thrived, though both gave urine loaded with blood, albumin and casts.

Case VII was of less importance.

Wilke published a case, also, where the infant had its fourth convulsive seizure 12½ hours after delivery, and its mother her first eclamptic seizure 13 hours post partum. In Woyer's case, the mother had her first eclamptic seizure four hours ante-partum, and three more post partum. The child died after its fourth convulsion.

Similar cases are reported by Schmid, Moraweck, Gurick, Eskelin and Levinowitsch. In one of Gurick's cases the eclamptic convulsion did not appear in the child until 46 hours after birth.

I think that enough has been quoted to show that children born of eclamptic mothers are far from being healthy. In every one of them marked structural changes in the viscera, indicative of grave intoxication, were readily demonstrated. Practically all of them, both those which survived and those which died, in whom the urine was examined, there were all the signs of more or less renal injury. The milder cases showed only slight albuminuria and casts; the graver cases showed blood, albumin and casts in large quantities. Moreover, in one case the albuminuria persisted for 18 days after birth. In all the cases that succumbed, there were grave structural changes in the liver and other viscera. Fry has clearly pointed out that healthy children's urine, even the very first urine secreted immediately after birth, is free from albumin, casts and blood. Therefore, we may rightly look upon the presence of these ingredients in their urine as signifying the same disease as they would indicate in the adult. Hence, it may be affirmed with all certitude that the vast majority of children born of eclamptic mothers or of mothers threatened with eclampsia, are more or less profoundly and similarly affected. Inasmuch as two of my cases were eclamptic mothers, and the third had ten grammes of albumin to the litre, and had muscular twitchings during delivery, one is pretty safe in considering the children as being tainted with the same disease as the mother.

I think, therefore, the answers to the questions, Are children born of eclamptic mothers healthy? Were the children in my three cases

healthy or only seemingly healthy before the onset of such startling symptoms? can be considered as settled as can any question in the open subject of medicine.

Moreover, I consider eclampsia in the mother a fruitful source of the many chronic cases of nephritis in young children. How often nephritis occurs in children from three to six months of age is rather difficult to establish; but this I do know, that within the last four months my attention has been called to two such cases by practitioners who knew that I was interested in the subject. The frequency of nephritis is overlooked in a great many cases, owing to difficulty of getting specimens of urine. But Dr. F. M. Fry, who has made urinalyses in 100 cases of infants in the foundling hospitals, has devised an easy method of obtaining specimens. This consists in putting cold to the abdomen or buttocks. It seldom fails, and a specimen can be obtained at any time, provided two hours have elapsed since the last urination. He found nephritis, evidenced by casts, in 31 per cent., and evidenced by albumin and casts in 19 per cent. Yet it seems strange that in looking over standard works upon diseases of infants, not one author makes mention of eclampsia, which, to me, seems such a potent factor in the etiology of nephritis in children.

Since writing these foregoing lines, another case of death of a child with all the symptoms of nephritis, has come to my notice. It was in its fifth month, and was born of an eclamptic.

Is an eclamptic mother's milk toxic? It would be a very singular lack of co-incidence if a mother's blood could be saturated with the poisons of metabolism, to such a degree as to cause the grave cerebral disturbances culminating in eclamptic seizures, without the secretion of the breasts being at all tainted with the same metabolic products. It would be contrary to all the laws which govern secretions. Some of the toxins must pass over into the milk. As evidence of this, I have but to mention the startling symptoms in the infant, when small doses of drug are administered by mouth to the mother. In such cases the doses given have been infinitesimal, yet the poisonous action has been seen in the nursing infant. At least, we must assume that a certain quantity of the toxines are eliminated in the milk. So much the more must this be the case, for Massen has shown that the urine of eclamptic mothers is less toxic than is her blood. Owing to the failure of the diseased kidneys to eliminate the products of metabolism the poisons become stored up in the blood. Under such circumstances, can the reader adduce any one case where the loss of function in one eliminative organ has not been more or less compen-

sated for by other organs of elimination? And, as to the question of the secretion of toxines in the milk, can we doubt the fact when we know that even bacteria pass from the mother's blood stream into the breast secretion? I think it is thoroughly established at the present day. The whole clinical picture is one of metabolic arrangement whereby the organism becomes saturated with the products of an auto-intoxication. That poisons do pass over in the milk needs, I think, no furtther evidence of confirmation.

If a mother's milk is toxic why should it be to her infant, which has been nourished through her own blood? Can a mother's milk secrete a concentrated, an accumulative toxin more virulent than that which circulates in her system?

Let me begin by answering the second question first. We have no evidence which we can bring to bear upon this question; I mean purely experimental evidence. The clinical evidence is slight, but of great value. But by analogy we have the strongest proof that such can be and is the case, that the mother's milk can secrete a more concentrated toxine than that which circulates in her blood. For example, consider mercury. Its administration to a nursing mother has produced on more than one occasion, alarming symptoms of poisoning in her child. Again, let me but refer to an experience of my own, in which, owing to gall stone attacks, I had administered two ¼ grains of morphia within twenty minutes, yet the fœtus in utero, so far as auscultation was concerned, showed no untoward effect, but the administration of a ¼ grain six days later, and 4½ days after the delivery of the child, caused the most alarming symptoms in the nursing infant. In other words, it got a more concentrated or larger dose through the milk than through the mother's placental circulation. You will probably object that morphia is a respiratory depressant, and that the respiratory centre is inactive in utero. To this objection, let me state that the eclamptic toxine acts also as a strong respiratory depressant in the fœtus, and its action is very similar to that of morphia, so the objection becomes, on the contrary, a very strengthening argument.

To further substantiate this point, I am indebted to my colleague, Dr. J. C. Meakins, for a most interesting case report. While working in the Rockefeller Institute, as clinical analyst, he had occasion to enquire into the cause of a persistent diarrhœa in a nursing child. He found that the mother had been taking five minims of Fowler's solution after meals. The diarrhœa in the infant had resisted all remedial measures. He found, upon examination of the mother's milk

and urine, that the same quantity of arsenic could be obtained from one part of the milk as from 10 parts of urine. In other words, the arsenic in the milk was ten times stronger than that in the urine. As soon as the arsenic treatment was stopped, the child grew better of its diarrhœa. The same argument holds for the toxine of eclamptics, for their urine is far less toxic than is their blood, and the breasts, having been free from function prior to delivery, would not be diseased to the same degree as the kidney, and nature would, in all likelihood, use them as a new avenue for elimination of toxic products.

Now, let us turn our attention to the first question. If a mother's milk is toxic, why should it be toxic to her infant which has been nourished through her own circulation? This is, probably, the most interesting point of this paper. It would seem very strange if a mother's milk is toxic, why so few infants are overcome. The reason for this seeming discrepancy is not far to find. It is known that in most cases of eclampsia, yes, in the vast majority of cases, the convulsive seizures come on prior to delivery, and that with the emptying of the uterus the patient's condition rapidly improves. So rapid is the improvement that the albumin, in a large percentage of cases, has completely disappeared by the third day. One has but to think of the tremendous diuresis which inaugurates the general improvement, to realize what an astounding amount of toxine must be eliminated in the first days post partum. Such is the course of the usual case; yet it is just during this period that the breasts are almost, if not wholly, inactive, and by the time that the breasts begin to secrete there is no longer any or but a comparatively low grade of toxæmia present in the mother. No, it is not in such cases that the milk becomes very toxic; it is just in those cases where the toxæmia of the mother remains, owing to failure of elimination, or worse still, when it reaches its height during full lactation. It will be in those cases in which some grave antecedent chronic renal affection prevents rapid elimination and favours a prolonged high index of maternal toxicity, or it will be in those cases where the seizures come on late post partum. It may be stated that the later post partum, and therefore the nearer to the period of full lactation, the graver will be the prognosis for the nursing child. Does this conform with my experience? It does exactly. Let me cite my cases:

Case I.—Seizures began on the morning of the third day. The baby had had its first copious nursing two hours before the onset of the convulsions.

Case II.—Eclampsia set in 32 hours post partum. The infant

received satisfaction at the breast for the first time a few hours previously.

Case III.—Muscular twitchings at labour, but no convulsions. Severe headache and loss of appetite on second day. The urine remained full of albumin, 7 grammes to the litre, and contained numerous casts. The child took sick on the morning of the third day after the mother had felt the milk pouring into the breasts through the previous night. The albumin did not disappear from the urine until six months post partum in this last case.

One well authenticated case in the literature is that of Kreutzmann, Assistant Physician to the Chair of Obstetrics and Gynæcology at the University of Erlangen (Prof. Zweifel), from whose report I will quote freely, inasmuch as it bears out to a nicety my own previously formed conclusions:

"Patient was a perfectly healthy primipara, who showed signs of "albuminuria at the sixth month of her pregnancy. During the last "month the albumin was 6 grammes to the litre. The labour was "easy, and the child vigorous. There were no eclamptic seizures in "the mother's case. The mother's recovery was good, though the "albumin persisted for a long time. The baby cried immediately "and was perfectly normal. He weighed nearly eight pounds. He "slept all day, and acted in every way as any other healthy baby would "do; the mother wished to nurse the baby, so he was put to the breast; "not getting anything there certainly but some colstrum; the nurse "gave him a little boiled water to drink. On the second night, about "36 hours after birth, the baby was taken with convulsions, which "came on without any warning; another attack was noticed next "morning, and a third one at 8 a.m. Neither one of these I, myself, "had the opportunity to see. At 11 a.m. there occurred another one, "followed in half an hour by a fifth. This last one occurred while I "was in the room. . . . He was kept perfectly quiet, not handled "at all; bromide of potash was given. There occurred only one more "short attack in the evening; from that time on the baby thrived on "diluted cow's milk, and later on a wet-nurse's breast beautifully. From the time of the first convulsion he had not been put to "the breasts. . . . The convulsions were described by the nurse "as being identical with those I saw."

After eliminating all possibility, he concludes that the cause must lie in the transmission of the toxines of the mother to her child in utero, and that this later caused the convulsions, or, "There is still "another possibility of intoxication for our newborn: it had been "put to the breast repeatedly, and certainly some colostrum was

"sucked and absorbed. This colostrum may have been the vehicle "through which the toxic matter was carried into the newborn's "organism. Mentioning these possibilities, I am fully aware that I "move on the unsafe ground of theoretical speculation. But the case "remains decidedly interesting; the mother suffering from a severe "nephritis of pregnancy, goes through parturition without eclampsia; "the newborn, to all appearances normal and healthy, is taken with "general convulsions resembling those of eclampsia parturientum."

In the review of this article, for the Centralblatt f. Gynäkologie, the writer concludes his resumé in the following line: "Surely, this "case is not without the greatest interest to the followers of "the theory of the toxæmia of eclampsia."

Kreutzmann, in reviewing the possibilities for such an eclamptic accident, states that it may be due to toxic influence during life in utero, or to the passage of toxines from mother to child, through the breasts. Why separate the two at all? It has been proven beyond the shadow of a doubt that children of eclamptics or nephritics, are children with a vitality below par. They come into the world diseased as to their several organs, and diseased especially as to their kidneys. That means, clinically, lowered power of assimilation, but it means more; it means diminished power of elimination through diseased kidneys. Hence, in the diseased state of fœtal toxæmia, the poisons in the colostrum are but "the last straw." To many, as we have seen, this "last straw" was unnecessary, for the children passed into the eclamptic state before they nursed at all. And just as not all children have suffered equally before birth, so will they not all suffer alike from toxic nursing. The degree of disease in the newborn will be in direct proportion to the length of time to which it has been subjected to the poisons in utero. But it will depend also upon one other factor, viz, how long it will have been in utero after the mother's true eclampsia has set in.

Too much stress cannot be laid upon these two last factors, yet of the two the second is the more important. Seldom it is that children of eclamptic mothers die in utero before the maternal eclamptic convulsions set in, but they usually succumb during or shortly after a seizure. The immediate cause for the onset of the convulsions in the mother is found in the uterine contraction, just as the cause of the death of the fœtus may be traced to the same source.

When studying in the Obstetrical Schools of Paris, I was taught—and I am a firm believer in the teaching—I was taught that eclamptic attacks seldom, if ever, come on in pregnant women without uterine contractions having set in. They find the immediate cause in

uterine contraction, inasmuch as this pumping action of the uterine muscles throws a large amount of toxines into the genaral systemic circulation. We have every reason to believe that the cause of eclampsia is the pregnancy, and the cause of pregnancy is the fœtus with its appendages. Removal of these, or even death of these, generally brings about a cure. The toxine, therefore, is generally thought to be of fœtal origin. Therefore, compression of the large uterine lymphatics and cavernous sinuses, as well as compression of the whole of the uterine contents, throws a larger amount of toxines into the systemic circulation than the maternal tissues are wont to receive in a given time. The result is a flooding of the maternal organism with the noxious products, and this finds its expression in an eclamptic convulsion.

Prior to the onset of the attack, the woman may not have been conscious of any uterine pain. This is not a strong argument against the presence of uterine action, for pains frequently go on for a long time without causing any marked impression upon the consciousness, and especially is this aided in the mental torpitude, more or less profound, which so frequently precedes an eclamptic attack. Moreover, how often is this the case that you are called to an eclamptic who has had one seizure; she is still conscious, has no knowledge of labour having set in; yet, when you examine, you are able to say that labour certainly has started. Dilatation is advanced sufficiently to let you know at once that labour is on. This is the rule and not the exception. On the other hand, the teaching in most of our schools is that the convulsion starts the labour.

What is the effect upon the fœtus? Why may it remain in utero for weeks before the eclamptic seizures, and suffer pathological change in all its organs yet so seldom succumb? Whereas, with one eclamptic seizure it may die in utero, or if it does not die will suffer more and more with each maternal spasm. The causes of death are two in number. Most seem to die of asphyxia, due to the prolonged spasm of the maternal respiratory muscles, together with the prolonged uterine spasms. But not a few die before birth as a result of eclamptic seizures. As proof of this, three cases are on record (Dohrn, Dienst, Ebinger) in which during Cæsarean section perfectly rigid dead children were removed, whereas the offspring were living at the time of the beginning of the Cæsarean operation. These children passed at once, seemingly, from a state of eclamptic tonus into the rigidity of death.

In what do my three cases resemble that of Kreutzman and of others? In all of them the clinical picture was the same, except for

one fact, namely, that in my cases there was not a true eclamptic seizure in any of the children, but there were rigidity of the muscles and muscular twitchings. In other respects there was always the somnolent state, the cyanosis, the irregular—now slow, now rapid—shallow breathing, gradually growing slower, and finally ceasing; strong cardiac action long after cessation of breathing; prolongation of life for a considerable time by artificial respirations; absense of nausea and vomiting, or of signs of disease in any of the systems. The symptom complex of the disease set in in apparently healthy children without other cause than nursing. Such was exactly the cause, also, in Kreutzman's report. Granted, then, that these three cases succumbed to, and Kreutzman's case was seized with convulsions, from the milk of toxic mothers, can a means of preventing such untoward effects be suggested. A consideration of the foregoing cases allow of an easy solution.

1. In a mother profoundly toxæmic and jaundiced, I think it will be well to feed artificially for quite a few days, and have the breasts pumped dry once or twice after the maternal toxæmia has improved, and before the child is allowed to nurse.

2. If the maternal convulsions come on post partum (these are the most dangerous cases for the nursing infant), then allow the maternal elimination to go on until she is freed from the greater part of her toxæmia, and then empty the breasts before allowing the child to nurse.

3. Does the albuminuria persist after gestation, it will be well to feed artificially throughout.

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PECULIAR CASE OF STRANGULATED HERNIA.

BY

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On October 1st, Dr. A. N. Worthington referred to me a case for operation. The patient was a male infant, age 14 months, who had suffered from a left-sided inguinal hernia since birth. Strangulation had been present for 36 hours, and after an unsuccessful attempt to reduce it with the patient under chloroform, I decided to operate.

On opening up the inguinal canal and the sac, the contents were found to be cæcum and appendix, which latter measured 3 inches in length. After the removal of the appendix, and replacement of the intestine into the abdominal cavity, the cogenital sac was obliterated by a continuous catgut suture and an operation for radical cure was performed. The patient made an uneventful recovery, and did not seem to suffer any inconvenience from the operation at any time. During the last few years I have been very much impressed with the manner in which my little patients under 3 years of age, upon whom I have been called to do abdominal operations, have stood the operation and gone through a convalescence with very little inconvenience.

Although the hernia of the cæcum and appendix down the right inguinal canal is not unusual, this is the first case in which I have found these structures in a left-sided hernia.

FATIGUE: NORMAL AND ABNORMAL; ITS SIGNIFICANCE TO THE PHYSICIAN.

BY

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The title of this paper depends upon the fact that there *is* such a thing as normal fatigue, a fatigue strictly within natural physiological bounds.

"That tired feeling," to use a catch phrase held in much repute by the exploiters of patent panaceas, is by no means of necessity a pathologic indication.

Whilst we shall not deny the *possibility* of a perfectly normal man, who has had a peculiarly equable existence, requiring honestly to ask the question "What do you mean by fatigue? what is it to be tired? I do not know the feeling," we must take exception to his position, if he intends to imply that only he and such as he are to be regarded as perfectly normal.

On the contrary, this very absence of the sense of fatigue, in which perhaps he glories, may be and often is a proof of a diseased condition of body or mind.

It *may* be normal, but on the other hand, it may be closely akin to the condition of the maniac in whom acute mental disease has so dulled the sensorium that there is no feeling of physical fatigue, even after forced walking and other over-exertion, so that he is able to stamp and rave for days and even weeks without a pause; or, akin to the state of the general paretic who, too ill to feel ill, declares that he never was better in his life, when sinking into the grave from sheer exhaustion.

That the entire absence of the sense of fatigue at all times is usually regarded as pathologic, is evidenced by the fact that the alleged induction of such a state, through a railway accident, has been made the ground for an action at law.

Most healthy normal individuals have at some time of their lives exerted themselves to the point of fatigue, until, perhaps, they may have felt for the time being as if there was only one thing in the world worth doing, and that to throw themselves down and rest, and rest, to all eternity. And, truth to tell, the sturdy son of toil can scarce know a Paradise of greater bliss than is afforded him by the humble couch whereon he may rest his weary limbs.

Nature has so designed it that all necessary things should be pleasurable, but also that, ceasing to be necessary, they shall likewise cease to give pleasure. Hence, in due time, we find that that eternal repose for

which we longed was a mistake, for, the sense of fatigue passing off, our pleasure now depends, not upon rest, but upon renewed activity.

By this means the normal cycle of activity and rest alternating and in due relation to each other, and forming the physiological basis of, and key to health, is readily ensured.

(So, then, it would appear that the poor overworked charwoman, who defined Heaven as a place "where we shall sit and do nothing for ever and ever," whilst she might be excused somewhat on account of her tired body, was nevertheless quite heterodox, if not in her theology, certainly in her physiology.)

I regard Fatigue as a mild form of pain, whose seat (as can be shown by experiment) is chiefly in the nervous system, and to which Hilton's famous simile of "Monitor" is therefore doubly applicable.

And what a judicious, careful, provident Monitor is this! Mosso's classical ergographic experiments need but to be mentioned in order to recall the fact that although the voluntary excitation of a muscle is always more effective than any artificial stimulus (producing, as it does, contraction in a muscle quite fatigued by electrical stimulus) yet the central nervous system is the first to "give up"; for a muscle which is beyond voluntary contraction will readily respond to electrical stimulation of itself or of its nerve, *i.e.*, in laboratory language, the central nervous system is fatigued more readily than the nerve-endings in the muscle, still more readily than the muscle itself, and infinitely more readily than the nerve fibres, the possibility of fatiguing which is doubted. Or, as Waller has concisely stated it, "A centre is the less resistant and cannot normally exhaust its peripheral instruments."

What does this mean? Simply this; that Nature takes no chances; she makes sure of an abundant physioligical margin; she believes in a bountiful reserve.

Hence, through the faithful Monitor, Fatigue (or, strictly speaking, the sense or feeling of fatigue), she calls a halt whilst she is still in possession of plentiful resources of strength, and capable of making quite a long forced march without any danger of exhaustion, *i.e.*, we feel tired before we really are tired.

Every student knows how, as the evening wears on, a feeling of drowsiness and tiredness comes over him. That is the monitor Fatigue —Nature's great protector against exhaustion, coaxing him to rest, and to make up the day's loss of strength. Let him resist that feeling for a while, and he is soon surprised to find how much more he can do, and that quite easily. But we can overdo this silencing of Nature's monitor, whose function it is to warn us of impending overstrain and approaching

exhaustion. Like conscience, it may be silenced, and that to the woeful grief of those who think to steal a march upon Nature.

Not a few of the world's most promising sons and daughters, geniuses we called them, have filled premature graves from no other reason than this. Urged by ambition, or fired by success, they have refused to be restrained, and whilst their death was ascribed to this or that disease, the real fundamental cause was Nature's persistently unheaded call for rest—they were exhausted to death, the particular disease which attended the closing scene being regardable almost as incidental. They went down to premature graves largely because their intense interest in their pursuits had robbed them of the faculty of appreciating fatigue.

Therefore, whilst no fixed standard can possibly be set up as to the amount of work one may safely undertake, it behooves the family physician to be on his guard when he learns concerning any of his clients that "they never seem to tire." There is this possibility, that they are possessed of a remarkable stock of energy, but there is the other, that it is the regulating apparatus that is out of gear.

But someone will say, "Is not fatigue merely the result of a using up of material necessary for activity, and of accumulation of waste products, a mechanical and automatic process largely?"

That something more than this must be reckoned with is evidenced by the fact that profound interest in one's work or play makes such a difference, warding off fatigue almost indefinitely, whereas detestation of a task, or expectation of fatigue increases or even produces the sense of fatigue.

The phenomenon of yawning, a sign of mental and physical weariness, is well known to be dependent largely on interest, and illustrates well the effect of mental attitude on fatigue. This indicates a value and a danger of psychotherapy:—a value, in its possible ability to remove a sense of fatigue which has no sensible cause assignable, and has no organic basis; and a danger, in that many a person has been made to believe (or has made himself believe) that he was all right, until he has dropped into his grave.

Having referred to the normal presence of a sense of fatigue, to a possible normal absence of the sense of fatigue, and to the abnormal sense of fatigue, there remains for our consideration the abnormal presence of the sense of fatigue, *i.e.*, a sense of fatigue not directly due to natural exertion on the part of the individual who feels it, but partaking of the pathologic.

The well-known dictum concerning fame might be applied to fatigue, for true it is that: Some are born tired; some acquire tiredness, *i.e.*, as

the result of voluntary exertion; some have tiredness thrust upon them, *i.e.*, as a result of disease.

It is with the first and third of these that we shall now concern ourselves.

Some are Born Tired.—This may be as a result in the parents of disease, of alcoholism, of over-work, or of over-ease.

With regard to this last, as it is a commonplace that those who rest overmuch are often the most tired, so it is a significant fact that children of people of ease, especially if there be an alcoholic taint present, are apt to belong to the "born tired" class. We have all met such. One case I particularly well remember. Poor Hiram Saunders! A family reversal necessitated his working for a living, a thing he seemed fitted enough for, as he had a splendid physique. But to work with anything like constancy he was unable. He would quit work at any time, his only reason being that he was tired, dead tired—not lazy—oh, no, just tired! "I can't help it," he would say, "I was born that way."

More numerous amongst the working classes are the "born tired" of overworked parents. Poor little mites, half-begotten children, born with a heritage of weakness! And yet, when one studies the conditions of life, in the largest cities, especially of the Old World, one wonders that there are not more such.

But Nature rarely sends a being into the world burdened with a handicap of weakness, if by any device it can at all be avoided. She usually refuses to allow that over-tiredness of the parent to perpetuate itself in the children, preferring rather to produce a dwarf, but that a lively one, than to produce a tired man.

The typical "Glasgow Keelie" is a good example. A mere pigmy compared with his not very distant but overworked ancestors, what he lacks in stature he undoubtedly more than makes up in activity.

I might mention as a possible matter of interest that the great Sir John Moore, of Peninsular fame, himself a Glasgow man, though not a "Keelie," was amongst the first to recognize the possibilities in this light type of man, and having organized them, made some of his most famous charges with companies of such light infantry, bidding them "Charge them doon the Gallogate boys."

These statements concerning Nature's processes are not mere airy fancies, but substantial facts which I have personally investigated, and can assuredly vouch for. Many a time have I been struck with the steady decrease in bodily frame and the corresponding increase in (or at least full maintenance of) bodily activity in each succeeding generation of city dwellers. Amongst the better classes there is naturally less

tendency to deteriorate, and as there is usually also a blending with fresh country blood, both standards (namely, of stature and activity) are better maintained. It is, therefore, amongst the poorer city classes (with whom the strong country folks would scorn to intermarry) that the phenomenon I have mentioned is best seen.

Of course, there comes a time when Nature can no longer strike a balance, and this fact corresponds with the axiom of sociology, that three or four generations of hard city life spell death, the energy of the race being completely exhausted.

Some have Tiredness Thurst upon Them.—Fatigue comes to them unsought, so to speak, not as the result of natural activity, but as a sign and symptom of disease. That fatigue is frequently not only a sign or symptom of disease, either at its onset or during its course, or both, but is also in some cases a not unimportant etiological factor in the same, is undeniable.

I need but to mention typhoid fever, to recall the insidious onset. Most of us are aware that a feeling of extreme languor, muscular fatigue. That fatigue is not only a predisposing cause in typhoid, but also a feature of its course, as of other fevers, goes without saying, death from sheer exhaustion sometimes occurring.

Most of us are aware that a feeling of extreme langour, muscular fatigue and asthenia, marks the onset of Addison's disease, and the marked weariness, fatigue and languor of diabetes, are also too well-known to require dwelling upon. And so on: the onset and course of pneumonia, nephritis, pulmonary tuberculosis, endometritis, and many other diseases, might be mentioned in this connexion.

Sometimes, the fatigue experienced in the course of a disease is more or less proportionate to the severity of the other symptoms, but most of us know from actual experience that this is not always so, for during an attack of influenza we have suffered a depression and debility markedly disproportionate to the other symptoms.

A simple eye-strain may cause a marked general fatigue, the patient feeling quite used up, in addition to having the local fatigue and a severe headache, etc. A correction of the error removes the lassitude in what seems to the patient a miraculous fashion. This fact is not without its significance to many an ardent but "tired out" student.

As we have said, fatigue may be also an etiological factor, as well as a symptom. Thus, *e.g.*, not only is it a very frequent symptom of multiple neuritis, but it is now acknowledged to be in many cases an important factor in causation.

Even the laity are well aware that fatigue, with its accompanying

lowered resistance, is a powerful predisposing cause in the production of disease, the infectious diseases being much more readily "caught," as they put it, when one is run down.

Having had occasion to visit a considerable number of country districts from time to time, I have come across in such districts a fair number of cases of pulmonary tuberculosis in young men. In most cases, one was somewhat at a loss to account for this yielding to the dread tubercle bacillus, the conditions of their life and the nature of their surroundings being markedly in favour of resistance.

In casting about for a possible predisposing cause, this element of fatigue has thrust itself upon me not once or twice.

It is notorious that many who generally take life more or less easily, at certain times, particularly harvest time, make excessive drains upon their strength, working vigourously from sunrise to sundown. Sometimes, especially if they expose themselves to an evening chill, an attack of fatigue fever results. (I refer to the non-specific fever—synochus simplex of Riverius, febris continua simplex of Lieutand—described by Murchison as a "sporadic, non-contagious disease, arising from exposure to the sun, fatigue, surfeit, inebriety, etc.," in which the typical symptoms of the febrile state are present but no specific lesion is discoverable.)

If Nature's warning is heeded all may be well, but if the pernicious attempts at manual exertion are persisted in, the pathway to disease, often fatal, is laid.

Knott, of Dublin, has contended that death may result from this form of over-exertion fever without any specific infectious agents whatever. However that may be, I for one am convinced that it is the antecedent of many an obscure case of fatal pulmonary tuberculosis.

Cases have been reported (by Wood, of Melbourne, Poore, of London, and others) of direct poisoning by waste products after over-exertion, in which foul breath, convulsions, coma and other uræmic symptoms were marked.

Fatigue, then, may be an etiological factor in disease, from (as Walker assures us) a simple hyperhidrosis (sweaty feet, *e.g.*) to serious and almost certainly fatal maladies, or a symptom in disease, from a slight coryza (common "cold in the head") to very grave conditions indeed, both mental and physical.

Now, all this is surely more than a mere matter of passing interest, devoid of practical value. It ought to suggest, and does suggest, a very practical course to the practitioner, both as to prophylaxis and to treatment.

To take one example. It is now practically established that fatigue is a not unimportant accessory factor in the production of tabes dorsalis. At Mendel's Polyclinic (Berlin) statistics showed that the proportion of males, as compared with females affected, was as three is to one; this amongst the public patients who belong to a sorely overworked class, many toiling twelve to fourteen hours a day or more. In Mendel's private practice, not only was the *percentage* less amongst those liable, but the *proportion* was significantly changed, being as twenty-five is to one.

The reason for this, and the deduction therefrom, is obvious. Amongst the poor all must work, male and female alike, often the female as hard as the male, whereas amongst the better classes, as met in private practice, the women take life more easily. Quite a substantial support you will admit for Edinger's exhaustion theory.

Another authentic observation pointing to the fact that fatigue has to be reckoned with in the etiology of locomotor ataxia, is that there was a very marked increase in tabetic cases amongst the British soldiers during and following the exertions of the last Boer war. Now, this could not well be due to increased exposure to specific infection, even granting that there might have been such, for tabes almost invariably tarries a considerable number of years. Therefore, the fatigue incurred during the campaign is the only plausible reason. This naturally suggests a point in the prophylaxis of tabes dorsalis—avoid fatigue.

Moreover, it suggests the necessity for care in treatment. Thus, when Frankel's excellent system is being employed for the re-education of the new neurones in the art of co-ordination, if we keep in mind that tabes is essentially an exhaustion disease, we shall be careful not to overdo our restraining, and so producing fatigue, induce more ataxia.

It is not always to be pooh-poohed and dismissed with a simple "take a rest":—albeit rest *is* the great restorer. It may indicate the onset of a grave disorder, and may, therefore, be of some diagnostic value. Occurring in the course of a disease, it may be indicative of its gravity or otherwise. It may indicate the temperament of the patient, a consideration in all rational treatment.

THE USES OF THE X-RAYS IN SURGERY.

BY

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The use of the X-rays in surgery has been well established for many years, their employment being part of the routine examination in suitable cases. Within recent years the great improvement in appar-

atus and in technique has enlarged considerably their field of usefulness. These improvements have resulted in great shortening of the time of exposure, better definition in the skiagram, and in opening up new fields of exploration. The limit of improvements has not yet been reached.

We are all familiar with the great aid which the X-rays have been in fractures, dislocations, diseases of bone, new growths, and in foreign bodies; information just as valuable can be obtained in examination of the skull, chest, and abdomen in conditions which previously were not thought to be acessible to the rays. There are several points to which I desire to draw attention; points which we must bear in mind when we seek the services of the X-rays.

First: Radiography is "shadowography," and not photography. We do not get a photograph of an object, but a photograph of the shadow of that object.

Second: The density of the shadow will vary with the atomic weight of the object casting the shadow. Lead, mercury, bismuth, calcium, etc., with their high atomic weights, offer obstruction to the rays, casting dense shadows, whereas the various gases of low atomic weight readily permit their passage.

Third: The X-ray plate is a positive, and the print from it is a negative, the opposite to that which prevails in photography. The image is latent, and must be brought out by the action of a developer.

Fourth: It is necessary to know from what point we are viewing the skiagram; whether from before backwards, from behind forwards, or from which side. To deduce this, we must know the conditions under which the exposure was made, that is the relative positions of the tube, patient, and plate. The majority of operators work with the tube above the patient and the plate below, although with many the reverse holds. If the exposure has been made with the tube above and the plate below, and one holds the plate with the film side towards him, he is then standing in the place of the tube and looking at the patient from before backwards, the film side always being next the patient in making the exposure. If the plate is held with the glass side towards him, he is looking from behind forwards. Right and left of the patient are then easily established.

The final point to which I desire to draw attention is that in disease we do not get as clear a picture as in health, and often this haziness is an important point in diagnosis, rather than the mark of a poor skiagram.

In the ordinary skiagram we see the parts in one plane only. By the introduction of plastic radiography, obtained by the special arrange-

ment of two plates properly prepared, in which the tissues are shown up in relief, and by stereoscopic radiography, we are enabled to see the parts in all their dimensions. In the use of bismuth or of zirconium oxide, owing to the obstruction offered to the rays, we have valuable agents in demonstrating the course of sinuses, or in investigating conditions of the œsophagus, stomach, or intestines.

I will now proceed to consider the surgical uses of the X-rays in the various regions. In the examination of the skull, valuable information is afforded concerning the various sinuses; frontal, ethmoidal, sphenoidal, and mastoid; antrum of Highmore; dental affections; and in conditions affecting the bony envelope, such as exostoses, arrest of development, diseases of the bone, and occasionally in fractures of the vault. Under favourable conditions, it would be possible to infer a meningeal hæmorrhage, owing to the additional obstruction to the rays offered by the blood. Regarding conditions of the brain, such as tumour, very little should be expected, for in addition to the fact that there are two layers of bone to be penetrated, each of which casts a shadow, there is also the point that tumours of the brain are generally of the same consistence as the brain itself, and hence cast the same shadow. It may, therefore, be said, that the diagnosis of uncalcified brain tumours by means of X-rays is uncertain. On the other hand, tumours presenting calcareous changes may be made out, depending upon the amount of calcareous change present.

Regarding the spine, valuable information may be afforded by the rays, especially in the cervical and lumbar regions. In the dorsal region, the shadow cast by the sternum, heart and blood vessels may be sufficient to obscure the shadow of the vertebræ. Congenital anomalies, such as cervical rib, spina bifida, fractures and dislocations are generally a condition frequently mistaken for "sprained back." Osteo-arthritic conditions show up as a roughening of the free edges of bone, or fusing together of articular surfaces. Areas of either lessened or increased density are suggestive of tuberculosis, as is also a narrowing of the space between vertebræ from destruction of cartliage. Abscesses are frequently demonstrated and the course of sinuses may be readily mapped out with bismuth.

The chest is still largely within the province of the physician rather than the surgeon, and the X-rays are accordingly of greater service to the former than to the latter. In conditions of empyæma, abscess of the lung, and foreign body the use of the rays is of undoubted assistance to the surgeon.

The abdomen presents a large field for investigation. In a skiagram of the abdomen, the spine, iliac crests, and ileo-psosas muscles are appar-

ent. The liver and spleen cast shadows due to the quantity of blood which they contain. A bubble of gas, manifested by an area of increased radiability, may point to the region of the stomach, and there is generally a large collection of gas on the right side in the cæcum. Other portions of the bowel may show this too. The kidneys can sometimes be made out normally, although the shadow is more evident in disease, and especially when enveloped in a fatty capsule, fat obstructing the rays. The pancreas itself is not evident, but recently attempts have been made to obtain some information as to its size by mapping out the duodenum in bismuth. At times it is possible to detect a subphrenic abscess by noting the height of the diaphragm.

The use of bismuth has proved to be of the greatest value in investigating abdominal conditions. By its use, information may be obtained concerning conditions of the stomach and bowels, either by the aid of the fluorescent screen or with the plate. Here, it may be necessary to make a series of skiagrams in both the horizontal and vertical positions, and at stated intervals, with a view of obtaining the degree of motility of the contents. By the aid of bismuth, hour-glass stomach, gastroptosis, and post-operative effects, such as after gastro-enterostomy, are evident. Tumours of the bowel, because they are of the same consistence as the surrounding tissues, we are not able to demonstrate, but we have in the use of bismuth, either by the mouth or by rectal injection, a valuable aid in pointing to the site of the obstruction. The injection of the large bowel with air will often aid by increasing the contrast, and in mapping out the bowel. The use of the X-rays in diagnosing abdominal aneurism is of little service, for unlike the chest, there is not the contrast to be obtained between air and blood. Occasionally, a concretion in the appendix will cast a shadow, as will also concretions anywhere in the bowel, a point to be remembered in examining for urinary stone.

In diseases of the urinary tract, the X-rays are of greatest value in stone, and here there are several points which require mention. The shadow of a stone will depend upon its composition, other things being equal. The densest shadow is cast by an oxalate of lime calculus, with cystine stone next. The latter is rarely met with. Phosphate of lime comes next, whilst mixed phosphates are very difficult to detect, as the rays easily permeate them, and for the same reason, uric acid and the urates are seldom detected. A sharply defined dense shadow is either an oxalate or cystine stone. If composed mainly of phosphates, the shadow is densest where the stone is thickest, shading off at the edges. A phosphatic calculus is frequently branched.

In reference to position, the vast majority of shadows internal, to a

vertical line drawn from the most prominent point of the iliac crest to the last rib, are due to stone, whilst the majority of shadows external to this line, are due to foreign bodies in the bowel. Calcareous glands also cast shadows internal to this line, but these shadows are close to the spine, and frequently in chain form. Calculi in the upper ureter cast shadows on a line touching the tips of the transverse processes of the lumbar vertebræ. When the shadow falls directly over the transverse process, it may be so blended as to be entirely overlooked. If the rays are directed obliquely, this difficulty may be overcome. Shadows cast by calculi in the lower ureter, must be in the line of the ureter crossing the sacro-iliac articulation, then curving at first outwards, backwards and downwards, then forwards, upwards and inwards. Ureteral calculi are oval or more or less elongated in outline, with long axis towards the bladder. Although they may be found anywhere in the ureter, the three places where they are most frequently found are just below the commencement of the ureter, where the ureter crosses the bony pelvis, and at its termination.

Shadows cast by stone in the bladder are generally large, oval, and centrally placed, most frequently near the pubis. The insuflation of the bladder with sterilized air is often of service by increasing the contrast.

There are several objects which cast shadows not unlike ureteral calculi, namely, phleboliths, calcareous glands, patches of atheroma in the vessels, and intestinal concretions. Phleboliths cast shadows very similar to ureteral calculi, and are frequently found close to the course of the ureter. They are usually circular, with sharply defined margins, and if more than one is present, the direction of a line joining them is not the line of the ureter. A bougie in the ureter, or a stereoscopic radiogram will clear up any doubt. Calcareous glands are not common. They occur most frequently along the brim of the true pelvis, and along the transverse processes of the lumbar vertebræ. Atheromatous patches are rarer still, occuring in elderly subjects. They are generally multiple, irregular in outline, vary in density, and lie transverse to the line of the ureter.

The use of an ureteral bougie opaque to the rays is of the greatest value in mapping out the course of the ureter. If a stone is blocking the ureter, the arrest of the bougie at that point will be shown, although it is possible for the bougie to pass the stone, and for it to be arrested by conditions other than stone. The bougie is of great value in diverticulum of the ureter, curling up in the diverticulum. With the bougie in the ureter, shadows of doubtful origin, such as phleboliths, will be seen to be outside the ureter.

The introduction of non-irritating organic preparations of silver, such

as a weak solution of argyrol, has been found to be of service in enabling one to obtain an idea of the size of the renal pelvis, that is the existence or not of dilatation. The diagnosis of tuberculosis of the kidney does not rest on the X-ray examination. The skiagram shows merely the presence of pus in the kidney region, and the probable absence of stone. This, in conjunction with the clinical history and the cystoscopic examination, will usually enable one to make the diagnosis. In conditions of the urinary tract, it should be remembered, that here, as elsewhere, the X-ray is but one part of the examination. An opinion on the origin of a shadow should not be expressed without taking into consideration the clinical history and the report of the cystoscopic examination.

In the examination of the extremities, the X-rays find their most frequent use. It is often advisable to make skiagrams of corresponding parts, especially in disease, in order that the diseased part may be compared with its fellow. In studying the skiagram, there is a definite routine to be gone through. It should be studied as though a horizontal section had been made through the part. It is essential to know the appearance of the normal, and particular attention should be paid to the epiphyses.

First: The contour of the part should be studied for any change in shape. It should be noted whether it is regular or irregular; whether any bulging of the surface, as in abscess, tumour, foreign body, effusion, projection of fractured bones, etc.; depressed or broken from old cicatrices, sinuses, or wounds.

Second: The condition of the soft parts, subcutaneous tissue and muscle. Whether any increase or decrease; any change in density or shape. These should be noted and compared with corresponding parts if necessary. The distance between skin surface and bone should also be noted. This is increased in fat subjects, abscess, new growths, or effusion, as in simple sprain. It is decreased in thin individuals, diseases associated with atrophy, such as joint tuberculosis, where there is atrophy in the neighbourhood of affected joints; or atrophy when the limb has been immobilized for a length of time. Increase in density or haziness may be caused by fat, blood, pus, serum, etc. The subcutaneous space may be encroached upon by conditions arising from bone, as periostitis or growths.

Third: The bone. There are three parts to be noticed in the bone, periosteum, cortex, and medulla. Under normal conditions, the periosteum as a separate entity, is not visible. When it is detached, eroded or bulged out, as from effusion or new growth, it is plainly evident. The surface of the bone may be irregular and rough either from old or recent disease. In examining the cortex, we should note its density and

size as compared with the medulla. In certain conditions the medulla increases at the expense of the cortex, and in others, the cortex increases at the expense of the medulla. The thickness of the cortex varies normally with the different bones, and in different parts of the same bone. In disease it may be increased, diminished or destroyed. It is increased in chronic inflammatory conditions of the bone, and diminished in conditions associated with atrophy, such as joint tuberculosis, or from pressure, as in new growths. This is manifested by increased radiability or lessened obstruction to the passage of the rays. Regarding the medulla, the same points should be noted here: whether there is any decrease or increase in size or any irregularity of the lumen. The presence of cavities and of areas of increased density will be readily noted.

Fourth: The epiphyses. The epiphyseal line or zone of proliferation should be examined with great care, as old or recent changes due to disturbance of nutrition, infection or trauma may be evident. An examination of the epiphyses and centres of ossification will determine whether their size and appearance conform with the age of the individual.

Finally, the joint should be carefully studied. The presence of thickening of the capsule, as in early tuberculosis, is of great value. The width of the joint should be observed, the articulating surfaces being widely separated in effusion, and approximated in destruction of the articular cartilage. The surface of the bone should be inspected for any irregularities due to disease or fracture.

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A SYMPOSIUM UPON THE X-RAYS.

The third meeting of the Medico-Chirurgical Society for the year, held on Friday, November 4th, was devoted to a symposium upon the uses of the X-rays in medicine and surgery. The evening was a most instructive one. In the ante-room was erected a stand on which were demonstrated, in the illuminated box, a large number of plates of interesting diseased structures; in the meeting-room were erected five demonstration boxes, in which were displayed the plates shown by the speakers. The credit of the electrical arrangements is due to Dr. Walter Wilkins, of the General Hospital, and Mr. McNeill, of the Royal Victoria Hospital. Thanks to them, too, the exhibits were put on promptly and to excellent advantage. Dr. Girdwood opened the subject with a few remarks upon the recent advances made in apparatus and in the application of the rays. Among the notable features referred to, is the "cinematographic" recording of movements of organs, where, by a rapid substitution of plates, four pictures have been successively obtained of the heart during a beat, and thirteen consecutive plates in the twenty-two seconds during which a peristaltic movement of the stomach occurred. Following this paper was the exhibition of a number of plates upon the screen. Dr. Birkett showed a number of plates illustrating the accessory sinuses of the nose, and the mastoid in suppurative diseases. Dr. Walter Wilkins showed a large number of plates dealing with various diseased states, which were of much surgical and medical interest, after which Dr. R. P. Campbell dealt with the use of the rays in the detection of calculi. He also showed a plate demonstrating the

unique condition of a ureteral diverticulum. Dr. Hamilton showed an excellent series of plates taken in cases of pneumothorax, hydrothorax and abscess of the lung, laying stress in a few sentences upon the value of the fluoroscope as a confirmatory agent, to be used to supplement, not to replace, the ordinary modes of examination. Dr. Martin, the President, showed plates indicating the heart in cases of moderate and great enlargement, and the aorta in aneurysm. Dr. Elder spoke excellently upon the abuse of the X-rays. He laid stress upon the practice needed for the intelligent reading of a plate; pointed out that the X-ray plate in fractures or suspected fractures, is too much depended upon for the diagnosis, to the exclusion of the careful examination of the patient by the eye and the hands, and made protest against the introduction of the X-ray plate in court-cases where the layman is utterly unable to interpret what is shown him. Dr. von Eberts showed a series of plates of the stomach, where the organ is outlined in its different shapes and positions by the rays upon bismuth, which had been ingested with food, following this with a series showing the colon similarly rendered visible. The latter series enabled the observer to note the position of an entero-colostomy relative to the fistula which it was intended to relieve. Owing to the length of the programme, the papers to be given by Drs. Turner, Forbes and Scrimger, were held over until the next meeting. The papers, without exception, were short and to the point, and a large amount of instructive subject matter was given with considerable clearness and brevity.

PROFESSOR PENHALLOW.

It is our melancholy duty to record the death of Professor D. P. Penhallow, one of the oldest members of the medical faculty of McGill University.

About a year ago Professor Penhallow suffered a nervous breakdown and was released from his duties at the University in the hope that a year abroad would instill him with new life and vitality, and enable him to take up his work once more.

When he returned to Montreal, a couple of months ago, his medical advisers could not say that he was yet in a fit condition to resume work, as a consequence of which the faculty of McGil unwillingly but necessarily, because his state of health demanded it, granted him further leave of absence. He died on board the Lake Manitoba, on which he had sailed for Liverpool, Friday, October 14.

Professor David Penhallow, B.Sc., M.Sc., D.Sc., F.R.S.C., F.R.S.A., was fifty-six years of age, having been born at Kittery Point, Maine, in

1854. In 1876, three years after he had graduated from the Boston University, where he was educated, he received the appointment of professor of botany and chemistry at the Imperial College of Agriculture, Sappore, Japan, a position held by him until 1880.

Professor Penhallow, who was appointed to the chair of botany in McGill in 1883, was well-known as a writer on scientific subjects, his largest and most important work in this respect being his Manual of North American Gymnosperms.

He leaves a widow and one son. It is understood that the funeral took place at sea.

COLORATION OF URINE BY PHENOLPHTHALEIN.

The Editor MONTREAL MEDICAL JOURNAL,.

DEAR SIR:—I notice in Dr. Cushing's most interesting report of a case of hæmatoporphyrinuria the statement that phenolphthalein is not known to colour the urine. I have not seen a case of this kind reported, but I have had a patient whose urine turned pink after taking daily five grains of phenolphthalein.

The case was one which had been in the surgical wards of the Montreal General Hospital, being treated for cystitis following retention of urine.

The symptoms had left him for a few months, but had returned when I saw him. The urine contained no pus, but was very alkaline with an excess of phosphates. He was very constipated and was given five grains of phenolphthalein daily with good effect. In addition he had five grains of urotropin and boric acid, as well as a tonic for his general condition, as he was suffering from disseminated sclerosis.

Shortly after starting the phenolphthalein the urine turned pink. On adding acid the pink vanished, only to return with possibly greater intensity on adding Na OH.

The colour vanished on stopping the phenolphthalein.

One other case of pink urine I have had, where a child ate some biscuits covered with pink icing. Within a day the skin turned a dead pink, the fæces were intensely red, and the urine was the colour of red ink.

Dr. Bruere kindly investigated the pigment and found it to be eosin.

In order to clinch the diagnosis, I ate a small portion myself, and the urine was coloured pink within a few hours.

Yours truly,

MALCOLM MACKAY.

Sherbrooke, P.Q., October 5, 1910.

Reviews and Notices of Books.

Hookworm Disease: Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment. By George Dock, A.M., M.D., Professor of the Theory and Practice of Medicine, Tulane University, New Orleans, and Charles C. Bass, M.D., Instructor of Clinical Microscopy and Clinical Medicine, Tulane University, New Orleans. Illustrated with forty-nine special engravings and coloured plate. St. Louis: C. V. Mosby Co., 1910.

One may find in very good form in this book the information he desires upon that ancient pest the hookworm. It is remarkable that for so long a time America failed to trouble herself about this parasite at all, and within the last few years newspaper exploitation made the public imagine that something actually new had transpired. Such was, indeed, the case, for although the disease and the parasite had been long known, a large amount of work was done before the zoological and geographical particulars of the malady in this country were understood. Prominent among workers on the subject are the authors of this work, and the book gains by being fresh from their laboratory. A short, interesting historical chapter is followed by the economics of the disease, its distribution and its importance, and this by the zoology of *Ankylostoma duodenale* and *Necator Americanus*. Their modes of infection are by the bowel and through the skin, some good experimental evidence being given of the latter. The pathology and symptomatology are, at the present, fairly familiar to readers; the latter is amplified with some good photographs of victims of the parasite. Under the heading Diagnosis, full laboratory directions, illustrated, are given. One of the most interesting chapters in the book is that upon prophylaxis, for here is indicated the great difficulty of proper assistance from the person most concerned—the generally ill-sufferers or only "carriers," may cease to be centres of distribution of ova by means of the fæces. In the hookworm disease thymol takes the first place, but many vermifuges have been used with advantage, but it is noteworthy that the drug must be given after a careful preliminary treatment similar to that in use when employing other vermifuges; and the serious symptoms exhibited by badly-infected cases demand a suitable hygienic regime. We can heartily commend Drs. Dock and Bass' book to everyone interested in the subject.

LIPPINCOTT'S NEW MEDICAL DICTIONARY. Edited by HENRY W. CATTELL, M.D. 1,108 pages. Philadelphia and London: J. B. Lippincott Company. Montreal: Charles Roberts.

There are many medical dictionaries competing for favour. The newest is that which is published by Messrs. Lippincott, and edited by Dr. Henry Cattell. Dr. Cattell is widely known in the profession as the editor of that excellent series "International clinics." We have tested the dictionary carefully, and find it entirely adequate for the needs of the medical student, the practioner, or laboratory worker for whom it is intended. We commend especially the adherence to established usage in spelling rather than a straining after new effects. Mechanically also the book is well done. The paper is durable though thin; the matter is clearly and conveniently displayed, and the binding is sound and flexible.

THE DISEASES OF THE NOSE, MOUTH, PHARYNX AND LARYNX. A Text-book for Students and Practicians of Medicine. By DR. ALFRED BRUCK (Berlin). Edited and translated by F. W. FORBES ROSS, M.D., Edin., F.R.C.S. England, late Civil Surgeon His Britannic Majesty's Guards Hospital, London; Assistant North London Hospital for Consumption and Diseases of the Chest, etc., etc., assisted by FRIEDRICH GANS, M.D. Illustrated by 217 figures and diagrams in the text, many of which are in colours. New York: Rebman Company, 1910. Price $5.00.

In addition to the anatomical trio, Nose, Throat, and Larynx, so often treated together in text-books, we are glad to find that the author takes up also the Mouth. Although the specialist's field is, as a rule, not wide enough to include this part adjoining the pharynx, the student and the "practitioner of medicine" cannot rationally divide them.

In this text-book of Dr. Bruck's there is more in the form than in the substance, which we find open for criticism. The translators say that they have endeavoured "to closely follow the German text"; they ought to endeavour to correct the English result. We cite for examples of strange English: "Training . . . only usually begins after the voice has developed," (p. 590); "eventual underlying disease," (p. 79); "eventual primary disease," (p. 37; "anæmized"; "the complications or not of other organs," (p. 155); and most remarkable of all "the fur coat of the tongue," (p. 179); and "the nose is the happy hunting-ground for operative busybodies," (p. 597).

The author's teaching in regard to individual pathological states differs here and there from that of many. Erysipelatous pharyngitis is a more recognizable entity in his book, and Thornwald's disease he

hardly admits to exist. He does not attach any definite value to the finding of the spirochæta pallida, saying that it is "not generally accepted as the *causa agens* of syphilis."

Examination of the accessory sinuses of the nose by Roentgen rays "is not often required, save for foreign bodies hidden in the nose or its accessory sinuses, or for a tumour." Such an estimate falls far short of the fact, since these rays can help to determine the presence of a sinus, its anatomical extent and the relative density of its contents.

In some of the minor surgical measures of the nose and pharynx, he is not modern. We do not expect to find Asch's operation given equal prominence with submucous resection; and in the directions for removal of hypertrophied or diseased tonsils, he has hardly kept abreast of the advances in the removal of tonsil and capsule.

It is a pleasure, however, to commend the author for the good features of his work.

At the beginning of each main section, he gives good and comprehensive summaries of the anatomical relationships and the physiology of the structures with drawings and diagrams.

The commoner diseases are described in *extenso*: the symptomatology is carefully worked up. Perhaps the best example of this is in the chapters on the diseases of the larynx and trachea; the author presents laryngeal paralysis in a readable form, and brings Semon's law out into special prominence. He discusses laryngeal arthritides in very logical terms, recognizing the difficulty in an accurate diagnosis between an arthritis and a periarthritis, but insisting on the recognition of pure joint diseases.

In regard to therapeutics, he is liberal in supplying a number of useful prescriptions (metric system.) He urges moderation in the use of applications to the different mucous membranes, especially the laryngeal membrane—advice which all will welcome.

He sets himself directly against intra-laryngeal treatment of malignant disease of whatever form, grudgingly except a clearly defined initial infiltration; "an intra-laryngeal operation is a great incitement for recurrence, . . . and is not seldom the reason for missing the psychical moment for performing a radical operation."

There are good chapters on the voice. The author gives sound advice against its over-use or straining, especially in the case of little children, compelled in the kindergarten to sing exercises, and of growing boys at the time of "breaking of the voice." He devotes one careful chapter to affections of the voice in singers and orators.

We would commend the book to careful consideration. Its faults,

as indicated above, are in general, of slight importance, and its excellences are pronounced.

H. S. M.

A Textbook of Pathology. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology, Medico-Chirurgical College of Philadelphia. Second edition; octavo, 856 pages; 437 illustrations. Philadelphia and London: W. B. Saunders Company, 1910.

The second edition of McFarland's Pathology has been not only greatly enlarged, but shows marked evidence of careful revision on the part of its author. In the process of revision the book has been brought well abreast of the science as it stands to-day. The general and special pathology are well proportioned, and each subject carefully considered. The combination of two kinds of print has served a useful purpose in keeping the book small. The photographs and photomicrographs are good and comprehensive. As a textbook for students, the book is all that can be desired.

Physiological Principles in Treatment. By W. Langdon Brown, M.A., M.D. Cantab., F.R.C.P., Physician to the Metropolitan Hospital, Medical Registrar and Demonstrator of Physiology, St. Bartholomew's Hospital, &c. London: Baillière, Tindall and Cox.

This book, of about 400 pages, is written by one who during the past ten or twelve years has combined the role of a laboratory worker and teacher in physiology with that of physician to a London hospital. He endeavours here to set forth in order those facts and principles which, having assimilated as an experimental physiologist, he has found particular sources of strength as a practical physician.

Starting with a general consideration of internal secretions, he passes on to an excellent review of our knowledge of the functions, disorders and therapeutic applications of the thyroid glands, giving more or less support to their use in myxœdema, eclampsia, jaundice and certain skin diseases, and discouraging their use, and, in fact, any kind of organo-therapy in Grave's disease. He then proceeds to discuss the physiology of the supra-renals, and recommends adrenalin in the treatment of shock, hæmatemesis, and other forms of vomiting, but considers it contraindicated in cerebral and pulmonary hæmorrhage. His knowledge of its use in heart disease is very limited, and he does not mention its use in asthma, perhaps, because it is dificult to explain its action in this affection on physiological grounds. Most of the other internal secretions are discussed briefly but adequately.

In the next chapter, he considers gastric disorders in the light of

the recent work of the Russian school and other workers in this field. He is fully appreciative of Pawlow's work, but in some instances differs from his conclusions, as for example, with reference to the adaptation of the ferment contents of the digestive juices to the food. The physiology of the pancreas and its relation to diabetes is well treated, and certain other disorders of metabolism and intestinal intoxications are reviewed in turn.

Much of Mackenzie's work on the heart is presented briefly but clearly although some exception may be taken to the section on heart block which is somewhat confused on account of no proper distinction being made between the parietal and complete forms.

The concluding chapters deal respectively with the vaso-motor system, including blood pressure, cyanosis and calcium metabolism. In all of these chapters he makes some valuable suggestions. For example, after discussing the role of calcium in blood clotting, and the antagonism between calcium salts and citric acid, he suggests the possibility of explaining the frequency of thrombosis, after typhoid fever cases in the late Boer war, by the use of condensed milk in which the citrates are made insoluble, and the calcium salts are left free to act unchecked.

It would be too much to expect of the author to have personally tested the whole wide range of facts dealt with in this book, but a considerable number of the principles enunciated have been put into practice in his own hospital work, and many more have, to his knowledge, been tested by others. Where this is not the case, he usually makes it clear that his recommendations rest as yet on theory or animal experiment as the case may be.

In our opinion, the book is extremely valuable, and is exactly what many men are looking for. W. S. M.

Messrs. Lea & Feibger announce for publication through their agents in Canada, Messrs. D. T. McAinsh & Company, 123 Bay Street, Toronto, a new work of which we transcribe the title:

MODERN TREATMENT; THE MANAGEMENT OF DISEASE WITH MEDICINAL AND NON-MEDICINAL REMEDIES.. By Eminent American and English Authorities. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica, Jefferson Medical College, Philadelphia; Physician to the Jefferson Medical College Hospital; Assisted by H. R. M. LANDIS, M.D., Medical Director of the Phipps Institute for Tuberculosis and Physician to the White Haven Sanatorium. In two very handsome octavo volumes, comprising 1,800 pages, with numerous engravings and full-page plates. Price per volume in cloth, $6.00, net; half morocco, $7.50, net. For sale by subscription only.

The following are the contents of Volume I:—Part I: General Considerations.—Modern Pharmacology and Its Bearing on Practical Therapeutics, by Horatio C. Wood, Jr., M.D., Associate Professor of Pharmacology in the University of Pennsylvania; The Combination of Drugs: Prescription Writing, by Ambrose Hunsberger, Ph.G., Lecturer on Commercial Pharmacy, Medico-Chirurgical College, Department of Pharmacy, Philadelphia; The Untoward Effects of Drugs, by Robert Dawson Rudolf, M.D. (Edin.), F.R.C.P. (Lond.), Professor of Therapeutics in the University of Toronto, Assistant Physician to the Toronto General Hospital and the Sick Children's Hospital.

Part II: The Treatment of Disease by Non-Medicinal Measures.—Climate, General Considerations, High Altitudes and Low Altitudes, by W. Jarvis Barlow, M.D., Professor of Clinical Medicine in the Los Angeles Department, College of Medicine, University of California, Member of the American Climatological Association; General Exercise, by Thomas A. Storey, M.D., Ph. D., Professor of Physical Instruction and Hygiene, and Director of that Department in the College of the City of New York; Mineral Springs, by Guy Hinsdale, M.D., Secretary of the American Climatological Association, Fellow of the Royal Society of Medicine of England and of the American Neurological Association; Hydrotherapy, by Simon Baruch, M.D., Professor of Hydrotherapy in Columbia University (College of Physicians and Surgeons), New York, and Arthur M. Shrady, M.D., Chief of Clinic; Electrotherapeutics, including High-Frequency Currents, by George E. Price, M.D., Assistant Professor of Nervous and Mental Diseases in the Jefferson Medical College, Assistant Neurologist to the Jefferson College Hospital, Philadelphia; X-Rays and Radio-Active Substances, by George E. Pfahler, and Director of the X-ray Laboratory of the Medico-Chirurgical Hospital, Philadelphia; The Rest Cure, by F. X. Dercum, M.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College of Philadelphia; Nutrition and Foods, by Julius Friedenwald, M.D., Professor of Diseases of the Stomach, College of Physicians and Surgeons, Baltimore, Visiting Gastro-enterologist to the Mercy Hospital, Bay View Hospital, St. Agnes Hospital, Union Protestant Infirmary, and the Church Home, Baltimore, and John Ruhrah, M.D., Professor of Diseases of Children and Therapeutics, College of Physicians and Surgeons, Visiting Physician to the Robert Garrett Hospital for Children, Nursery and Child's Hospital, Mercy Hospital, and Consulting Physician to the Church Home and Infirmary, Baltimore; Disinfection, Hygienic Measures, Personal, Communal, and National, including Control of Epidemics, by J. W. Kerr, M.D., Assistant Surgeon-General of the United States Public Health and Marine Hospital Service; Serum

Therapy and its Underlying Principles, by W. H. Park, M.D., Professor of Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, Director of the Research Laboratory of the Department of Health of New York City; Vaccines and Opsonic Therapy, by Nathaniel Bowdwitch Potter, M.D., Visiting Physician to the New York City Hospital, to the French Hospital, and to the Hospital for Ruptured and Crippled, Associate in Clinical Medicine, Columbia University, New York, and Oswald T. Avery, M.D., Associate Director, Department of Bacteriology, Hoagland Laboratory, Brooklyn, N.Y.

Part III: The Treatment of Diseases of the Digestive System and Allied Organs.—Diseases of the Mouth and Salivary Glands, including Mumps, Diseases of the Stomach, Diseases of the Intestines, excluding Obstruction, but including those Diseases of the Rectum which can be Treated by Medicinal Measures, by Joseph Sailer, M.D., Professor of Clinical Medicine, University of Pennsylvania; Diseases of the Liver, Gall-Bladder, and Pancreas from the Medical Standpoint, by Herbert C. Moffitt, M.D., Professor of Medicine, University of California, San Francisco, Cal.

Part IV: The Treatment of Diseases of the Respiratory System.—Diseases of the Nasal Chambers, Pharynx and Larynx, Medical Treatment, by George Fetterolf, M.D., Laryngologist to the Henry Phipps Institute, the White Haven Sanatorium, and the Eastern Pennsylvania Institution for the Feeble-minded and Epileptic; Asthma, Acute and Chronic Bronchitis, Whooping-Cough, by Arthur Newlin, M.D., Pediatrist to the Howard Hospital, Physician to the Out-patient Department of the Pennsylvania Hospital, and of the Children's Hospital, Philadelphia.

Part V: The Treatment of Diseases of Nutrition and Diathetic Diseases.—Diabetes Mellitus, Obesity and Scorbutus, by Elliott J. Joslyn, M.D., Instructor in the Theory and Practice of Physic in Harvard Medical School, Second Assistant Visiting Physician to Boston City Hospital; Diseases of the Thyroid and Thymus Glands, by S. P. Beebe, Ph.D., M.D., Assistant Professor of Experimental Therapeutics, Cornell University Medical School, New York.

Part VI: The Treatment of Diseases of the Nervous System.—Diseases of the Brain, including Insanity, Apoplexy, Diseases of the Spinal Cord and Nerves, Meningitis and Cerebritis, and Disorders of Sleep, Headaches, Neurasthenia and Neuralgia, by D. J. McCarthy, M.D., Professor of Medical Jurisprudence in the Medical Department of the University of Pennslyvania, Neurologist to the Henry Phipps Institute, and to the Philadelphia and St. Agnes' Hospitals; Occupation Neurores and

Poisonings in the Arts and by Foods, by James Hendrie Lloyd, M.D., Neurologist to the Philadelphia Hospital and to the Methodist Episcopal Hospital, Consulting Neurologist to the State Hospital for the Chronic Insane, Wernersville, Pa.; Epilepsy, Hystero-Epilepsy, Tetanus and Chorea, by William T. Shanahan, M.D., Medical Superintendent of the Craig Colony for Epileptics, Sonyea, N. Y.; Morbid Habits, by F. X. Dercum, M.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College of Philadelphia.

Part VII: The Treatment of Diseases of the Genito-urinary Apparatus.—Nephritis, Phosphaturia, Chyluria, Albuminuria, Lithuria, Oxaluria, and Diabetes Insipidus, by James Tyson, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine in the Medical Department of the University of Pennsylvania; Diseases of the Uterus and Pelvic Organs (Non-surgical), including Diseases of Pregnancy and the Puerperal State, by Brooke M. Anspach, M.D., Associate in Gynæcology, University of Pennsylvania, Gynæcologist to the University, Philadelphia, and Stetson Hospitals.

Part VIII: The Treatment of Diseases of the Skin, by Howard Fox, M.D., New York, Member of the American Dermatological Association.

Part IX: Non-surgical Treatment of Diseases of the Eye.—Ocular Therapeutics, Normal and Abnormal Refraction, Presbyopia and Principles Involved in Fitting Glasses, by James Thorington, M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine (1996-1909), Member of the American Ophthalmological Society, Fellow of the College of Physicians of Philadelphia, etc.

Part X: The Treatment of Diseases of the Ear and Tympanic Membrane.—Acute and Chronic Disease of the Middle Ear, by S. MacCuen Smith, M.D., Professor of Diseases of the Ear in the Jefferson Medical College of Phliadelphia, Otologist to the Germantown Hospital: Glandular Therapy, by S. P. Beebe, Ph.D., M.D., Assistant Professor of Experimental Therapeutics, Cornell University Medical School, New York; Tuberculin as a Therapeutic and Diagnostic Agent, by F. M. Pottenger, M.D., Medical Director of the Pottenger Sanatorium, Monrovia, Cal.

Part XI: The Treatment of the Infectious Diseases.—Tyhhoid Fever, by David Riesman, M.D., Professor of Clinical Medicine, Philadelphia Polyclinic, and Assistant Professor of Medicine in the University of Pennsylvania; Smallpox, Scarlet Fever, Measles, Rubeola, Rothelin, Chickenpox, by Dana Hubbard, M.D., Attending Physician, Department of Dermatology, Vanderbilt Clinic, Columbia University, N.Y., Attending Dermatologist New York City Children's Hospitals, Medical

Inspector, Department of Health, New York, formerly Diagnostician, Department of Health, New York, and Chief Medical Inspector, Borough of Brooklyn, Department of Health, New York; Cerebrospinal Meningitis, by Charles Hunter Dunn, M.D., Clinical Instructor in Pediatrics, Harvard Medical School, Assistant Physican at the Children's Hospital, Boston, Assistant Physician and Pathologist at the Infants' Hospital, Boston; Croupous and Catarrhal Pneumonia, including Pleurisy (Non-surgical), by Frank Sherman Meara, M.D., Professor of Theraputics in Cornell University Medical School, New York; Tuberculosis, by H. R. M. Landis, M.D., Medical Director of the Phipps Institute for Tuberculosis, and Physician to the White Haven Sanatorium; Diphtheria, by B. F. Royer, M.D., First Associate Chief Medical Inspector in the Department of Health of Pennsylvania, formerly Chief Resident in the Municipal Hospital for Contagious Diseases of Philadelphia; Acute Articular Rheumatism, by Thomas A. Claytor, M.D., Clinical Professor of Medicine, George Washington University, Physician to the Garfield Memorial Hospital, and to the Tuberculosis Hospital, Washington, D.C.; Cholera and Cholera Morbus, by Leonard Rogers, M.D., F.R.C.P., Professor of Pathology and Physician-in-Charge of the Cholera Wards in the Medical College of Calcutta; Plague, by Thomas Wright Jackson, M.D., Medical Reserve Corps, U. S. Army, lately Captain and Assistant Surgeon, U. S. Volunteers, lately Lecturer on Tropical Medicine, Jefferson Medical College, Member of the Manila Medical Society, the Philippine Islands Medical Association, the American Society of Tropical Medicine, Author of a Text-book on Tropical Medicine; Influenza, by Oscar Wilson, M.D., Instructor in Clinical Medicine in the Jefferson Medical College of Philadelphia; Yellow Fever, by Aristides Agramonte, M. D., President of the Board of Infectious Diseases, and Member of the National Board of Health, Professor of Bacteriology and Experimental Pathology, National University, Havana; Pellagra, by H. F. Harris, M.D., Secretary and Director of the Laboratories, State Board of Health of Georgia, Atlanta, Ga.

Following are the contents of Volume II:—Part I: The Treatment of Diseases Due to Parasitic Infection.—Malarial Infection in all its Forms and Complications, Trypansomiasis and Kala Azar, Uncinariasis and Helminthiasis, by Charles F. Craig, M.D., Captain, Medical Corps, United States Army, Assistant Curator, Army Medical Museum, Assistant Instructor in Clinical Microscopy and Bacteriology, Army Medical School, Washington, D.C.; Syphilis in all its Forms and Complications, by William S. Gottheil, M.D., Adjunct Professor of Dermatology in the New York Post-Graduate Medical School and Hospital, Attending Der-

matologist to City Hospital, and Lebanon Hospital, New York; Amœbic and other Dysenteries, by Thomas Leidy Rhoads, M.D., Major and Surgeon in the U. S. Army, Walter Reed General Hospital, Washington, D.C.

Part II: The Treatment of Diseases of the Circulatory System.—Acute and Chronic Diseases of the Heart, as well as Nervous Disorders and Functional Disturbances, and Diseases of the Bloodvessels, by James Mackenzie, M.D., M.R.C.P., London; Diseases of the Blood and Blood-Making Organs, by J. C. DaCosta, Jr., M.D., Associate in Clinical Medicine, Jefferson Medical College, Philadelphia, Pa.

A Practical Study of Malaria. By A. Deaderick. W. B. Saunders Co., Philadelphia. Canadian Agents, The F. J. Hartz Company, Toronto, 1909.

There are now many works upon the market dealing with various aspects of malaria and malarial problem, and it might be held that this work fills no special need. On the other hand, it is thoroughly sound. It is written by one keenly interested both in the clinical and the biological aspects of the subject, and it gives the latest work upon the life history of the malarial parasites, so that as a good general review of the subject, written simply, but, at the same time, soundly, it is a useful work for the library of the physician who has to keep himself abreast with the times.

Manual of Operative Surgery. By John Fairbain Binnie, A.M., C.M. (Aberdeen), Professor of Surgery, Kansas State University, Kansas City. Published by P. Blakiston's Son & Co., Philadelphia. In two volumes.

The appearance of the fourth edition, in two volumes, following so closely upon the third edition in one volume, carries with it its own recommendation. Dr. Binnie is a surgeon who happily combines the solid, careful, and thorough knowledge of anatomy and conservative surgery of the Scotch school, with the progressiveness, acuteness and broad-mindedness, in no small measure, due to his many years of residence in the land of his adoption.

While it is still claimed to be a pocket edition, it has almost outgrown that definition. One would not have wished it otherwise. The work should be of the greatest help to all interested in operative surgery, and particularly to the student and junior surgeon, as it fills a distinct gap between the small compact text books commonly used by students, and the expensive editions covering a full range of the subject.

One can find no criticism to its teachings, but in reviewing the

volumes, one is compelled to refer to the beautiful anatomical drawings and the concise phraseology used, making the descriptions easy to follow. It contains all of the operations in modern scientific surgery, with many original illustrations.

Dr. Binnie has been fortunate in having obtained the suggestions of a number of eminent surgeons of international reputation, among whom one might mention Drs. W. J. and C. H. Mayo, and Messrs. Robert Jones and Arbuthnot Lane. The publishers are to be congratulated on the beauty of the text and the reproductions of the illustrations.

A Text Book of Medical Jurisprudence and Toxicology. By John Flaister, M.D., D.P.H. (Camb.), F.R.S.E. E. T. S. Livingstone, Edinburgh.

The volume opens with a valuable chapter on legal criminal procedure in England, Ireland, and Scotland, followed by an excellent chapter on medical evidence, both of which are to be recommended as worthy of careful perusal, not only by students, but by the profession in general. The questions of personal identity and identity of the dead are fully treated. The other subjects usually found in works on medical jurisprudence are very complete and well illustrated by specific cases. The second section of the edition is devoted to toxicology, and gives a clear and concise description of the symptoms, treatment, dosage, and post-mortem appearances after the various forms of poison. The volume as a whole is an excellent one, and worthy of a place in a physician's or surgeon's library.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The second regular meeting of the Society was held Friday evening, October 21st, 1910, the President, Dr. C. F. Martin, in the Chair.

The address of the retiring President, Dr. W. Grant Stewart, was then read, and was discussed by Drs. Girdwood, Blackader and Gardner, who recalled many interesting reminiscences of the early history of the Society.

Dr. Stewart was accorded a hearty vote of thanks for his interesting address.

The resignation of Professor Wesley Mills was then brought up, and it was moved by Professor Gardner that his resignation be received and that he be made an Honorary Member of the Society. This was seconded by Dr. Girdwood and unanimously carried.

LIVING CASES.

1. GONORRHŒAL ARTHRITIS OF THE HIP. 2. CHARCOT'S JOINT OF THE FOOT.

W. G. Turner, M.D. This first case is of interest to the Society, after the discussion last meeting on chronic rheumatism. Seven years ago the patient began to complain of pain in the right hip. This gradually grew worse until the patient had to lay off from duty as a policeman for weeks at a time. He was on night duty, and usually after two or three hours walking would be obliged to give up. There was limitation of abduction and rotation, flexion and extension were normal. At first sight it appeared to me to be the general onset of osteo-arthritis, but after careful questioning we elicited the fact that there had been a Neisser infection, pretty severe, but from which the patient thought he had been completely cured. He was put at rest for two or three weeks, and on finding some threads in the urine we put him on vaccine, and started giving him 50 minims once a week. After the third injection the patient was very much improved, and since then until ten days ago he has been pratically well. The injections were given once a week for over three months. The slight recurrence of pain was due to cessation of the vaccine, owing to his absence from town, and to the fact that he was exposed to rain during a long drive, and on getting out of the carriage gave a severe wrench to the hip. There is nothing in the hip to examine, the patient has returned to his duties, and shows no sign of the typical walk or the difficulty in rising from a chair, which four months ago was so marked. The X-ray picture shows a rather dense bony shadow which is really the thickening of the edge of the acetabulum.

The next case was referred to me by Dr. Russel from the neurological clinic, and is of great interest as showing a condition of the metatarsal joint as described by Charcot. The patient at the age of 20 contracted lues, and five or six years after began getting lightning pains in the right leg and also right knee. He had followed treatment very thoroughly in Paris, but the pain came on very severe, and this kept on until he came under the neurological clinic for treatment. Early this spring he noticed that his left foot was weak and stiff, and thinking that it probably was only stiff he jerked it rather violently, and he has had this disability ever since. It is a typical picture of a Charcot joint, which was probably aggravated by this last wrench. The X-ray shows very typically the Charcot joint on that side. This is a rather unusual site for this condition. The last one I saw was with Dr. Russel, and the patient was a bricklayer, and the exciting cause was the fact that he

carried a hod on his shoulder, and the condition was simply the result of added strain on one foot in walking up and down a ladder.

J. M. Elder, M.D.—I would like to ask Dr. Turner if he attributed the improvement in the first case to the giving of the vaccine? On looking at the skiagram one sees definite bony tissue, as well as the inflammatory tissue. Does Dr. Turner think there may be absorption of the new bone thrown out as well as of the inflammatory tissue—absorption due to this vaccine treatment

W. G. Turner, M.D. As to the absorption of the actual bone salts, I do not know. The X-ray picture was taken when he first came into the clinic, and at that time we were acting on the assumption that it was an osteo-arthritis. I have not had an X-ray taken since the treatment, it might be interesting though I doubt if any alteration in the picture could be expected. The change has been decidedly due to the infiltration of the cartilage, giving the typical picture of a gonorrhœal joint; and the improvement is due to the fact that the adhesions have been pretty well absorbed.

PATHOLOGICAL SPECIMENS.

L. J. Rhea, M.D.1. *Tuberculosis of the Intestines.*—Male, age 30 years. Autopsy Findings: Tuberculous cavities of the lungs: Generalized miliary tuberculosis: Tuberculosis of the intestines.

The specimen is intestine. On the mucous surface there are numerous discrete and confluent, ulcerated areas. They show great variation in size. As a rule they are ragged and their edges are undermined. The larger ones are seen to run in the direction of the circumference of the intestine. Small grayish tubercules are seen in the base of some of the ulcers.

2. *Pure Culture of the Bacillus of Tetanus.*—The patient from whom this culture was obtained fell 15 feet and inflicted a deep puncture wound in his axillary region. For two weeks he was well. Then convulsions appeared and his jaws became locked.

The culture was obtained from a small bit of foreign material found at the bottom of the puncture wound.

1.5 cm. below the surface of the medium there is a growth 3.5 cm. long composed of numerous radiating filaments.

3. *Retraction Diverticulum of the Œsophagus.*—Male 3 years old. Acutely ill five weeks. Temperature 100° 103°. There was rigidity of the neck and retraction of the head. Kernig's sign present.

Autopsy Findings: Generalized miliary tuberculosis: Tuberculous meningitis: Tuberculous lymph nodes: Tuberculosis of the myocardium and retraction diverticulum of the œsophagus.

Specimen consists of a portion of the trachea, œsophagus, lung and a group of adherent, partly calcified lymph nodes. Trachea and œsophagus have been opened. There is a small opening in the œsophagus which leads into a smooth walled, blind pouch, which is firmly attached to a group of adherent, lymph nodes. These nodes are surrounded by dense fibrous tissue and show calcified areas.

4. *Thrombosis of the Superior Mesenteric Vein with Infraction of the Intestines.*—Male about 55 years old. Admitted to hospital in semi-comatose condition. History indefinite. For a few days has had pain in abdomen. On examination there was tenderness in lower abdomen. No rigidity. Bowels moved freely. No vomiting.

Autopsy Findings: Thrombosos of superior mesenteric vein, with infarction of intestine. Broncho-pneumonia. Acute peritonitis (localized). Atrophic cirrhosis of the liver. Specimen consisted of a portion of the small intestine with adjacent mesentery and a small piece of the pancreas. Intestine and mesenteric veins opened. The intestine and adjacent mesentery show very dark coloured areas. The largest is seen as a triaugular-shaped area with apex toward the root of the mesentery. Intestinal wall and mucous membrane very dark. Rugæ in this area thickened and prominent. On the visceral peritoneum there is an acute grayish exudate. Superior mesenteric vein shows a firmly adherent thrombus. In the distal portion of the lumen of the vessel the thrombus is grayish; nearer the intestine it is dark red.

J. M. Elder, M.D.—With regard to the tetanus case, one has but to see these cases in the wards of a large hospital to recognize that this was a typical case. If there be no foreign body, but simply an infected wound, you do not, as a rule, get tetanus; but if a foreign body has been implanted in the wound, the patient may develop tetanus, and then in and about the foreign body you get the bacillus.

With regard to the pouch of the diverticulum of the œsophagus, I understand Dr. Rhea's explanation is that these glands became attached to the outside, and as they became calcified they pulled out and produced a pouch of the œsophagus. Might it not be that an abscess had evacuated itself into the œsophagus and left this cavity or pouch?

DEMONSTRATION OF HAMBURGER'S APPARATUS FOR ESTIMATING THE RESISTANCE OF THE RED CORPUSCLES AND ITS PRACTICAL APPLICATION TO CLINICAL MEDICINE.

O. C. Gruner, M.D.—This apparatus is one designed by Hamburger to estimate the resistance of the red corpuscles. The term "resistance" may be interpreted in different ways, but the most satisfactory way, from the clinical point of view, is that it expresses the degree of resistance exercised by the corpuscles to certain salt solutions. The red cor-

puscle may be regarded as composed partly of stroma and partly of interglobular (cellular) fluid, and the resistance of the corpuscle as a rule is made up of the resistance of the stroma plus certain other factors. In calculating the resistance, the resistance of the total corpuscle is taken as a function of the resistance of the stroma, of the osmotic pressure of the intracellular fluid and of the percentage volume of that fluid. That brings the subject into a rather complicated form. The actual estimation is simple. The apparatus consists of a number of tubes which are or definite size and almost all of the same capacity; there is a straight piece made of thermometer tubing, and graduated very exactly into 100 parts, this swells out into a funnel-shaped dilatation at the top, which is capable of holding about 3 cc. of fluid, a little cap at the top serves to keep the fluid intact during manipulation. That upper chamber is filled with the fluid to be used for testing, and the lower chamber receives ultimately the deposit of red cells which is produced by centrifugalization. A certain quantity of blood, which is defibrinated and is also filtered, is put into each vessel. This is measured very accurately by means of a special pipette. Into each tube is put a certain strength of the solution, against which the resistance is to be calculated. The blood will not go into the small tube at once. It is mixed up in the dilatation and allowed to stand for one quarter of an hour. After that, the succession of tubes is put into a centrifuge capable of receiveing 12 tubes. You then centrifuge for a given time and see whether there is any hæmolysis in the supernatant fluid, or ascertain when the volume of the deposit is exactly constant. The graduation on the wall enables you to read exactly the amount of deposit of the red cells. Observations are taken in half-hour, one-hour, and one-hour-and-a-half periods, and when you find that the volume remains unaltered, that will mean the conclusion of the experiment, and the reading is registered.

The simplest way to make an estimation is just to estimate the hæmolysis and you can easily see whether the supernating fluid is pink or not. You have to know, however, the strength of fluid which that number of red cells is able to stand without alteration of the volume (as compared with that of the tube containing normal saline or serum), and it is for that purpose that the series of tubes is needed.

The formula ultimately will run: that the resistance of the stroma of the red cell is proportional to that concentration of the fluid which allows the volume to remain constant. Another factor is the percentage volume of the fluid inside the red cell. This is neglected in ordinary estimations, because you are comparing blood of similar species of animals, since it may be assumed that that factor is the same in all

human red cells, but not in human as compared with animals'. That is the method which has been used for estimating the resistance of red cells in physiological work.

As a matter of fact this instrument is further valuable because it enables you to find out the exact variation of volume of red corpuscles before and after sudden procedures, such as the injection of toxine into animals. The volume may be taken before and after the experiment. It can be applied in any similar experiment with human beings, to find out the changes in the volume or red cells; *e.g.*, before and after ether anæsthesia.

Another use for the apparatus is the estimation of the osmotic pressure of the blood serum. That is done by taking a known quantity of blood and mixing it with a certain volume of normal saline and adding successively drops of water until you get a fluid, which, when mixed with the red cells, causes hæmolysis to occur. The concentration of the fluid is known before and after, so that all the data required for calculation are to hand.

A.D. Blackader, M.D.—I confess I would like to know under just what conditions we could make use of this test.

O. C. Gruner, M.D.—The words "practical application" does not, in this case, refer to everyday clinical work, but to the use which can be made of it in studying red cells under different conditions. So far, it has simply been used in learning the changes in the blood of fevers and anæmias, and various general diseases. It has here brought out the result that resistance is diminished in fevers and anæmias, and led to the discovery of the relation of these changes to those in the actual chemical composition of the blood. In some diseases the difference in amount of carbon dioxide in the blood causes differences in the resistance. The application to *everyday* clinical work is not yet perfected, but it is useful for special work in connexion with blood examinations.

Wm. Gardner, M.D.—Dr. Gruner spoke of a difference or reaction in blood corpuscles from the human and from animals; I would like to know if this difference is marked.

O. C. Gruner, M.D.—The difference between the resistance of human red cells and that of animals is not so characteristic as to be of use for medico-legal purposes, for instance.

Blood Pressure: Demonstration of various forms of apparatus.

John McCrae, M.D.—Significance in clinical medicine.

E. W. Archibald, M.D.—Significance in clinical surgery.

W. S. Morrow, M.D.—Remarks.

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PRESIDENT'S ANNUAL REPORT MONTREAL MEDICO-CHIRURGICAL SOCIETY.

BY

W. GRANT STEWART, B.A., M.D., Montreal.

I can imagine no greater compliment the members of the Medico-Chirurgical Society can bestow upon one of their number than to choose him as their President. My gratitude is sincere, and I find it difficult to express my appreciation of the honour you did me in asking me to preside at your meetings during the year just ended. It was not, indeed, without some considerable degree of trepidation that I accepted the responsibilities of the office. But since this greatness was thrust upon me I deemed it would be ungracious on my part not to accede to your wishes.

The year has come and gone, and I am here to-night to give an account of my stewardship. My tenure of office has been rendered happy by your kindly interest, by the advice of my distinguished predecessor, Dr. Hutchison, by the consideration of a sympathetic Council and the labours of our indefatigable secretary. Of Dr. McKee's unfailing courtesy, self-denying work, and earnest endeavours to make each programme varied and interesting I cannot speak in too high terms. Those only who have preceded him in the secretarial chair—and a goodly number I may say who now stand high in the annals of Montreal medicine have done so— can realize in its fulness the labour involved and how much the success of the meetings depends upon the secretary. Not only, however, in his official capacity, but from a scientific standpoint does Dr. McKee reflect alike credit on himself and on the Society. This Association delights to honour those to whom honour is due.

I would like to take this opportunity to congratulate the Society on their choice of President for the ensuing year. No member can fill the chair with more ability than Dr. Martin. Full of the enthusiasm of youth, the judgment of vigorous manhood, steadily climbing the ladder which leads to fame and success, he is just the man to make an ideal president, and one who will maintain the dignity and traditions of the office. I can wish him nothing better than that he may have as much

happiness and real pleasure as I have had while holding the reins of office. As I look over the list of noble names which have in the past graced this chair, I realize it is no small honour, indeed, to follow in their train.

In no way can one form a better estimate of the medicine of the earlier days of Montreal than by going over the pages of the old minute books of this Society. What a story their pages unfold! They give sketches of the master minds in medicine of early days—the men who laid the foundation of everything great, and good, and scientific, and solid in the medicine of this city.

It is a story of struggle, of temporary defeat and final triumph. On these pages are written the names of all the great men who have been actors in the drama of local medicine for the past half century. As one reads, it is shown that "there is no exemption from the common doom for him who holds the shield to protect others. The professor from the chair, the practitioner in his busiest period hears a knock more peremptory than any patient's midnight summons, and goes on that unreturning visit which admits of no excuse and suffers no delay."

It is interesting to note that this is the 49th annual meeting since the earliest beginnings of the Society in 1843, and the 40th anniversary of the final reorganization in 1870. It is stated in the old minute book "that at a meeting of the members of the Medical Faculty of Montreal, held at the house of Dr. Crawford, in Little St. James Street, on Saturday, 23rd September, 1843, it was unanimously resolved 'that it is very desirable that the members of the Medical Faculty of Montreal should have an opportunity of meeting in a friendly manner, for the purpose of communicating together in subjects connected with their profession, and the undersigned agree to form themselves into a Society for that purpose: A. F. Holmes, O. F. Bruneau, J. B. C. Tressler, Archibald Hall, Henry Mount, Wm. McNider, J. G. Bibaud, Jas. Crawford, Geo. W. Campbell, C. S. Sewell, Wm. Sutherland, Francis Badgley, Arthur Fisher, David B. Logan, Wm. Fraser, C. A. Campbell, M. McCulloch, F. C. T. Arnoldi, Peter Munro.'"

The following are the fundamental laws of the Society: That the Society be denominated "The Medico-Chirurgical Society of Montreal;" "That the objects of the Society's meetings be the communication of any interesting subject connected with the medical profession, whether in the form of cases in actual practice, details of post mortem examinations, the exhibitions of preparations in morbid anatomy, chemistry, natural history, or any branch bearing on the profession."

Of the original members all are dead with the exception of Arthur Fisher, of Montreal. The Society at this time was in existence for eight

years. No meetings were held after March 6th, 1852. The names of a number of prominent men were on the list of the Society's honorary members: Robt. Dunglisson, Prof. of Institutes of Medicine, Jefferson College; Dr. Graves, Dr. Stokes, Dr. Corrigan, Dublin; Dr. Marshall Hall, London; Dr. John Rose Cormack, Edinburgh, Editor *London & Edinburgh Journal of the Medical Sciences;* Dr. McDonnell, Dublin, Editor *Dublin Medical Journal.*

The next thing we hear of the Society is in 1865. A meeting of the members of the medical profession of Montreal was called by a circular signed by R. P. Howard, M.D., L.R.C.S.E.: Hector Pelletier, M.D., Edin.; W. H. Hingston, M.D., L.R.C.S.E. And in response to the call the following members of the profession assembled on Friday, July 28th, 1865, at 8 p.m., in the committee room of the Mechanics' Hall, in all twenty-three: Drs. Sutherland, R. P. Howard, Scott, Pelletier, Coderre, Hingston, Boyer, Reddy, Craik, Fenwick, Dagenais, Pickup, F. W. Campbell, Trenholme, Leprohon, Rottot, Squire, Thompson, Sabourin, Bessey, Raymond, Guerin, Hamel, Labadie, Vilbon, Gauthier, Mount, Jacques, Dubuc, Leblanc.

On motion of Dr. Howard, seconded by Dr. Scott, Dr. Sutherland was called to the chair. And on motion of Dr. Scott, seconded by Dr. Hingston, Dr. Squire was requested to act as secretary. The President then briefly addressed the meeting in French and English, stating its object, namely to organize an association for the purpose of advancing medical and surgical science in the city and province. It was moved by Dr. Hingston, seconded by Dr. Pelletier, and unanimously resolved:

"That it is desirable to form a Society for the Advancement of Medical and Surgical Science in this City and Province, to be styled—"The Medico-Chirurgical Society of Montreal." A committee was appointed to draw up regulations for the organization of the Society.

At the adjourned general meeting held on the evening of August 4th, 1865, the report of the committee on organization was presented, and the following twenty-four gentlemen, duly qualified, formed the Society: Drs. Geo. W. Campbell, Wm. Sutherland, Wm. Fraser, R. Palmer Howard, Eugene H. Trudel, Beaubien, J. Emery Coderre, J. G. Bibaud, Wm. E. Scott, Robt. Craik, Hector Pelletier, W. H. Hingston, John Reddy, J. L. Leprohon, George E. Fenwick, L. Boyer, E. Lemire, Dagenais, A. B. Laroque, Robert Thompson, Globensky, Desrosiers, F. W. Campbell, W. Wood Squire.

During the next three or four months nineteen new members were added. Of these forty-three members who constituted the new Society, all have passed away but our esteemed friend Dr. G. P. Girdwood. I

am sure he could give us some interesting reminiscences of these olden days. We are glad to have him with us: he is an example to us all. He has always been and is still a regular attendant at our meetings, and we trust he may be with us for many years to come.

No meetings were held after March 2nd, 1886.

The final reorganization was made in 1870. A meeting of the members of the medical profession was held in the reading room of the Natural History Society on the evening of November 5th, 1870, for the purpose of considering the formation of a Society for the Advancement of Medical and Surgical Science in this city. Dr. Fraser was appointed chairman, and Dr. Roddick was requested to act as secretary. After considerable discussion, the following resolution, moved by Dr. Geo. W. Campbell, seconded by Dr. Hingston, was carried unanimously: "That this meeting form themselves into a Society to be called 'The Medico-Chirurgical Society of Montreal.'" A constitution and by-laws were adopted at a subsequent meeting.

The new Society commenced with thirty-eight members: Drs. Geo. W. Campbell, Robt. E. Godfrey, Colin C. Sewell, S. B. Schmidt, D. C. McCallum, John Reddy, J. M. Drake, E. Robillard, A. H. Kollmyer, John Bell, Geo. Ross, T. G. Roddick, T. A. Rodger, Wm. Fraser, A. H. David, Hector Pelletier, Geo. Fenwick, Robt Craik, Robt. Thompson, E. H. Trenholme, Angus McDonnell, J. J. Dugdale, Wm. Gardner, John Vicat, S. E. Tabb, Wm. Sutherland, W. E. Scott, Robt. L. McDonnell, J. L. Leprohon, R. P. Howard, W. H. Hingston, F. W. Campbell, G. P. Girdwood, J. P. Rottot, R. A. Kennedy, Wm. Fuller, C. J. H. Chipman, John T. Finnie.

Of the original members of the reorganized Society the following alone remain: Drs. T. G. Roddick, Wm. Gardner, G. P. Girdwood, John T. Finnie.

The minutes form very interesting reading, and their value is such that for safe keeping they should be placed in the library of the College.

I have culled some jottings from the old records. The Society originally met on each alternate Saturday from October 1st to May 1st, and on the first Saturday of the month for the remaining six months of the year. In 1871 the night of meeting was changed from Saturday to Friday. Occasionally meetings were cancelled because of the small number present. The membership fee was three dollars. Among the names of the members in the early years many were French, and the minutes were written both in French and English, which shows the *entente cordiale* which existed in those days.

In 1873, Dr. A. A. Browne became a member. On March 28th, 1873, it was moved and seconded that "the secretary be instructed to

keep a book with an index in it into which may be entered the names, with remarks of those who do not pay for medical attendance. That the book be produced at the meetings."

The following interesting entry is found in the minutes of November 13th, 1874: "The ballot was taken for Dr. W. Osler which resulted in his unanimous election for membership." For a number of years after this date Dr. Osler's name is a very prominent one in the proceedings of the Society. October 22nd, 1875, "Dr. Shepherd was proposed by Dr. Osler." January 28th, 1876, "The ballot for Dr. Buller was entirely favourable."

An amusing minute is noted on December 20th, 1875: "An extraordinary meeting of the members had been called. The chairman explained that the meeting had been called in compliance with a requisition presented to him and signed by a large number of the members of the Society. The object of the meeting was to consider a bill affecting the medical profession, which was about to be legislated upon by the Quebec Parliament." Several telegrams, which came from Quebec, are entered in the minutes. I shall only refer to the last and give it as it appears in the minute book:

Montreal Telegraph Co.

No. 331. Time 2.15. Montreal, December 20th, 1875.

By Telegraph from Quebec.

To Dr. W. E. Scott.

"Bill lies dead. Printed in French. Go no further. Amen."

Signed,

R. H. Russell, M.D.

The Society held its meetings for a number of years in the Natural History Society's rooms. In May, 1880, it met for the first time in the rooms 14 Phillips Square, where Birks' building now stands. Here, in 1888, began my acquaintance with the Society. During the Phillips Square regime Osler made the meetings famous by his morbid anatomy demonstrations. From 1890 to 1901 the Society led a somewhat nomad life. About 1890, for one year the meetings were held in the Natural History Society's rooms on University Street under the presidency of Dr. F. J. Shepherd. The next move was to Dr. Buller's chambers at the corner of Stanley and St. Catherine Streets. Six years were spent here under the following presidents: F. Buller, Jas. Stewart, Jas. Bell, G. P. Girdwood, A. D. Blackader, and G. W. Wilkins. For the next three years the meeting place was Drummond Hall, situated a few doors below St. Catherine Street, on Drummond Street. The presiding officers at this point were Robt. Craik and J. G. Adami, the latter hold-

ing office for two years. During Dr. Adami's time the Society was incorporated and a new constitution was drawn up.

In 1900 the headquarters of the Society were again changed to Norman's dancing academy at the corner of McGill College Avenue and St. Catherine Street. Dr. Perrigo was President at this time. This corner has had rather an interesting history. I can remember when a block of stone houses stood here occupied mostly by doctors. Some friend, with antiquarian proclivities, might erect a tablet "Here lived William Osler, Frank Buller, and Arthur A. Browne." A halo of romance surrounds the spot. For did not this triumverate become famous, and many an interesting story is still handed down of their daily walk and conversation. All that now remains of the old corner is Osler . . . and the dancing academy.

In 1901, after much wandering and many vicissitudes, the Society settled in its present quarters. It was, I think, Dr. Perrigo who welcomed us. This was another epoch in our history. Since then it has been progress all along the line. Our membership increased, our influence increased, the interest in our meetings increased, and the fee increased. Many, and interesting, have been the meetings held here. Could these walls speak, what a history would they tell of heated discussions, of able addresses, and of scientific demonstrations.

The rooms, which were considered too large, have now become almost too small. Under the last regime, the following have occupied the chair: James Perrigo, Geo. E. Armstrong, H. S. Birkett (two years), J A. McDonald, F. R. England, F. G. Finley, Wesley Mills, J. Alex. Hutchison, W. Grant Stewart, Chas. F. Martin.

Special volumes of the proceedings were published from 1881 to 1894. Since that time the proceedings have been published in the Montreal Medical Journal. For a number of years the Society has employed a stenographer to keep a record of the discussions.

Since I joined the Society the following members have "one by one crept silently to rest": R. Palmer Howard, Geo. Ross, J. J. Dugdale, Richard McDonnell, R. A. Kennedy, John Reddy, E. H. Trenholme, R. T. Godfrey, T. Johnson Alloway, Wyatt G. Johnston, R. C. Kirkpatrick, Thos. D. Reed, E. P. Williams, A. Brodeur, J. A. Brunelle, Rollo Campbell, F. W. Campbell, D. McG. Decow, Chas. O'Connor, W. H. Drummond, James Stewart, Robt. Craik, Frank Buller, N. D. Gunn, D. C. McCallum, John D. Cameron, W. R. Sutherland, Sir Wm. H. Hingston, W. S. England, W. J. Telfer, S. F. Wilson, Arthur A. Browne.

Such is a sketch of the past. "The dust of passing years has blurred the details, even, in part, the general outlines of the picture."

Presidents of the Montreal Medico-Chirurgical Society.

1843	No president.
1844	No president.
1845	A. F. Holmes.
1846	James Crawford.
1847	Francis Badgley.
1848	Geo. W. Campbell.
1849	Wm. Sutherland.
1850	F. C. T. Arnoldi.
1851	R. L. McDonnell.
1852	
1865	
	No meetings.
1866	W. H. Hingston.
	No meetings.
1870	Geo. W. Campbell.
1871	T. H. Pelletier.
1872	R. P. Howard.
1873	W. H. Hingston.
1874	Dr. Reddy.
1875	Dr. Godfrey.
1876	Geo. E. Fenwick.
1877	F. W. Campbell.
1878	H. H. Howard.
1879	R. Palmer Howard.
1880	W. H. Hingston.
1881	Geo. Ross.
1882	R. A. Kennedy.
1883	T. Rodger.
1884	T. G. Roddick.
1885	T. G. Roddick.
1886	J. C. Cameron.
1887	James Perrigo.
1888	Wm. Gardner.
1889	Geo. E. Armstrong.
1890	F. J. Shepherd.
1891	F. Buller.
1892	James Stewart.
1893	James Bell.
1894	G. P. Girdwood.
1895	A. D. Blackader.
1896	G. W. Wilkins.
1897	Robert Craik.
1898	J. G. Adami.
1899	J. G. Adami.
1900	J. Perrigo.
1901	
1902	Geo. E. Armstrong.
1903	H. S. Birkett.
1904	H. S. Birkett.
1905	J. A. McDonald.
1906	F. R. England.
1907	F. G. Finley.
1908	Wesley Mills.
1909	J. Alex. Hutchison.
1910	W. Grant Stewart.
1911	Chas. F. Martin.

Secretaries of The Montreal Medico-Chirurgical Society.

1843	F. Badgley.
1844	F. Badgley.
1845	R. McDonnell.
1846	David
1847	Sewell.
1848	Pelletier
1849	Gibb.
1850	Gibb.
1851	Gibb.
1852	
1865	
1882	A. Henderson.
1883	D. F. Gurd.
1884	D. F. Gurd.
1885	D. F. Gurd.
1886	R. F. Ruttan.
1887	R. F. Ruttan.
1888	R. F. Ruttan.
1889	H. S. Birkett.
1890	J. G. McCarthy.
1891	Kenneth Cameron.
1892	Kenneth Cameron.

	No meetings.
1865	Nemire.
1866	W. Wood Squire.
1867	
1868	
1869	
	No meetings.
1870	T. G. Roddick.
1871	T. G. Roddick.
1872	T. G. Roddick.
1873	T. G. Roddick
1874	T. G. Roddick.
1875	John Bell
1876	A. A. Browne.
1877	R. McDonnell, J. D. Cline.
1878	O. C. Edwards.
1879	O. C. Edwards.
1880	O. C. Edwards.
1881	O. C. Edwards.
1893	Kenneth Cameron.
1894	G. Gordon Campbell.
1895	G. Gordon Campbell.
1896	G. Gordon Campbell.
1897	Ridley McKenzie.
1898	Alfred T. Bazin.
1899	Alfred T. Bazin.
1900	Alfred T. Bazin.
1901	Alfred T. Bazin.
1902	Alfred T. Bazin.
1903	A. McKenzie Forbes.
1904	A. McKenzie Forbes.
1905	A. H. Gordon.
1906	A. H. Gordon.
1907	A. H. Gordon.
1908	Hanford McKee.
1909	Hanford McKee.
1910	Hanford McKee.
1911	Hanford McKee.

Now a word about the present. As one scans the programmes, and reads the papers, and studies the discussions of last year when massed together, one stands in wonder at the wealth of material, at the amount of earnest work done and at its scientific excellence. You will admit that all this must be to the furtherance of knowledge and the good of mankind.

What are the advantages offered by a society like this? They are many. It inculcates sociability. It is almost the only place where one can meet his fellows on common ground. This is becoming, in fact, it has become, a great city, and it is difficult to meet one's confreres except in some such association as this. It promotes friendship. Perhaps its most important function is educational. It promotes high ideals, acts as a stimulus to do one's best. It keeps the old man young, like the ancient philosopher, who maintained perennial youth by the constant companionship of young men. It makes the young man old, in that he profits by the experience of his seniors. It helps one to "cling to that mood of mind bent on winning to the very heart of everything," helps one "to believe in real work as the means whereby, in its own good time, what is now hidden will be laid bare."

A committee was appointed last winter to canvass all those who were not members among the English physicians of the city. Of

those to whom I spoke, some were only waiting to be asked; some, like Felix, wished to delay for a more "convenient season"; one absolutely refused—he was perfectly satisfied to go on in his old rut. The members may be divided into three classes: Those who never come to the meetings; those who come occasionally, and those who are regular attendants. The progressive portion of the profession is to found, as would naturally be expected, in the last class.

This Society can wield a great influence, if every member—and every member can do something—would pledge himself to earnest effort to advance its interests. There is a great opportunity, and it demands only united and determined effort on the part of each member.

In conversation with Dr. Chipman one day last winter, he made the remark that "there was something wrong with the man who did not attend the meetings of the Society." "Why is it," asks Osler, "that a large majority of all practitioners are not members of a medical society?" He answers, "In part it is due to the apathy of the officers, and failure to present an attractive programme, but more often the fault is in the man himself. Perhaps, given over wholly to commercialism, a doctor feels it a waste of time to join a society. And so it is, if he is in the profession for the money he can get out of his patients, without regard to the sacred obligation to put himself in the best possible position to do the best that is known for them. The man who knows it all and gets nothing from the Society, reminds one of that dried up miniature of humanity, the prematurely senile infant, whose tabetic marasmus has added old age to infancy. Why should he go to the Society and hear Dr. Jones on the gastric relations of neurasthenia, when he can get it all so much better in Einhorn and Ewald? He is weary of seeing appendices, and there are no new pelvic viscera for demonstration. It is a waste of time he says, and he feels better at home, and perhaps that is the best place for a man who has reached this stage of intellectual stagnation."

"A well conducted society," says the same authority, "may be of the greatest help in stimulating the practitioner to keep up habits of scientific study."

Eighteen regular meetings were held during the year, and one special meeting, at which a very interesting address was given by Dr. R. W. Phillips, of Edinburgh, Scotland, on "The Dispensary Movement and the General Practitioner." Dr. Phillips is the founder of this great movement in connexion with tuberculosis. The address was of great value and of interest, and much light was thrown upon this latest method of combating this disease. Dr. Elliot, of Toronto,

read a paper on "Tuberculosis and Milk." As he is the secretary of the commission appointed by the Canadian Medical Association to look into this question, he was able to speak with authority. An interesting discussion on both papers followed. The evening concluded with a successful "smoker."

At the commencement of the year there were 179 members. Fourteen new members were added. Four severed their connexion with the Society, making a total of 189 members at the end of the year. Of these, 186 are resident and three non-resident. In these figures the house staffs of the various hospitals are included.

I am sorry to say that some of our most active members have left us. We shall miss T. Wesley Mills's familiar voice in our discussions. He always added dignity to our meetings. And those of us who were his old students feel we have lost a friend. We hope that he may have health and happiness in his adopted home. Dr. Campbell Howard, whom we respect not only for his own sake but for the love we had for his esteemed father, has gone to a larger sphere of usefulness. Dr. Wolbach has done almost more than any man since Osler's time to make the pathological part of the evening interesting. Never has there been such a variety of rare specimens, so beautifully prepared, and so clearly described. The sincere thanks of the Society are due Dr. Wolbach for the splendid work he has done for us. Our loss is Harvard's gain.

"Our annual meeting never fails to teach us at least one lesson. The art whose province it is to heal and to save, cannot protect its own ranks from the inroads of disease and waste of the destroyer." The words of Holmes apply in a very emphatic manner to the death of one of our most esteemed members, who has passed away since our last annual meeting. For years he had been one of the very active members, and for some time one of the secretaries. The reports of the meetings over his signature are truly classical. A man who was beloved alike by confrere and patient. I refer to Arthur A. Browne, who upon the 26th day of January, 1910, was called from his labours to the great majority. He was well named the "beloved physician." It makes a difference to the world when such a man passes away.

Our Society stands for growth and advancement, so it is not unnatural, in the ordinary course of events, that last year should have been one of the most successful in its history. At the largest meeting of the year the attendance was 70. The average attendance was 54.

I should like to express my thanks to all those who contributed to the success of the meetings . . . to those who came as listeners (it is always encouraging to the actors on the stage when there is a good and

enthusiastic audience); to the writers of papers; to the exhibitors of interesting specimens; to those who gave demonstrations; to the readers of case reports; to those who, at considerable personal trouble, showed living cases; and to those members who added to the interest and usefulness of the meetings by taking part in the discussions. The papers were of a high order, and numbered eighteen:

PAPERS.

Hanford McKee.—Spring Catarrh; Trachoma Bodies.

J. Appleton Nutter.—Sacro Iliac Strain.

J. R. Goodall.—Climacteric Hæmorrhages.

R. P. Campbell.—The Spirochæte and Its Diagnostic Significance.

W. W. Chipman.—Report on the Method of Spinal Anæsthesia as Demonstrated in New York by Prof. Jonesco, of Bucharest.

John McCrae.—An Analysis of 71 Cases of Scarlet Fever.

J. R. Goodall.—Should the Eclamptic Mother Nurse?

J. E. Laberge.—The Board of Health in Connexion with Infectious and Contagious Diseases.

W. S. Morrow.—Nodal Rhythm.

A. Lapthorne Smith.—Twenty-five Years in Abdominal Surgery.

J. G. Adami and W. Tytler.—The Effect of Cold on the Body.

R. H. Craig.—Impressions of the Sixteenth Medical Congress, Buda Pest.

E. M. von Eberts.—Intrathoracic Surgery: Differential Methods: Exhibition of Positive Pressure Apparatus.

A. McKenzie Forbes.—Some Forms of Treatment Illustrated.

E. W. Archibald.—Pancreatitis, Acute, Subacute, and Chronic Recurring Forms of the Disease.

T. Wesley Mills.—Some Considerations Bearing on the Surgeon, the Patient, the Nurse, Based Largely on Personal Experiences as a Patient.

Dr. Maude Abbot was to have read a paper at the last meeting of the series, on Original Contributions of Women to the Art and Science of Medicine, but unfortunately was prevented through illness. We hope, however, Dr. Abbot will give the Society the pleasure of hearing the paper, which we know in her hands will be both interesting and instructive. The Society would take this opportunity to congratulate Dr. Abbot on the great honour bestowed on her by McGill University, in granting her the degree of M.D., *honoris causa*. She holds the distinguished honour of being the first lady graduate in the Faculty of Medicine of McGill. She is eminently deserving of the distinction, for her work is acknowledged the world over.

The Demonstrations were eight in number:

J. L. Todd.—The New Human Trypanosome.

E. M. von Eberts.—Demonstration of the Apparatus for the Administration of Rectal Anæsthesia.

H. A. Lafleur.—A Glass for Use in Examining Cases of Ocular Paralysis.

F. E. Tooke.—A New Forceps for the Removal of the Anterior Lens Capsule.

G. Shanks.—Two Cases of Appendicitis Perforated with Pins.

H. M. Little.—Momberg's Tube for Postpartum Hæmorrhage.

F. W. Nagle.—Demonstration of the Tester Apparatus for Nitrous Oxide Oxygen Anæsthesia.

Case Reports.

A. E. Garrow.—Tetany occurring during operation on the stomach.

A. Lapthorne Smith.—Tubal pregnancy.

F. T. Tooke.—Two cases of the so-called doubling of the puncta lacrymalis.

Geo. H. Mathewson.—Thrombosis of the retinal veins with return of good vision; Amblyopia *ex* anopsia with acquisition of good vision.

R. Kerry.—Five cases of tuberculosis of the eye.

J. Alex. Hutchison.—Actinomycosis of the ascending colon.

A. McKenzie Forbes.—The place of braces in the treatment of weak, pronated, and flat feet, with especial reference to a simple method for the preparation of the plaster cast on which they are fashioned.

F. C. Finley, Geo. E. Armstrong, and S. B. Wolbach.—Amœbic abscess of the liver originating in Montreal.

A. E. Garrow.—Pneumococcus peritonitis.

R. E. Powell.—Hook Worm Disease.

D. A. Shirres.—Injuries to the brachial plexus.

W. F. Hamilton.—Metallic poisoning.

Geo. E. Armstrong and S. B. Wolbach.—Banti's disease.

J. Alex. Hutchison and S. B. Wolbach.—Carcinoma of the splenic flexure.

A. H. McCordick and R. G. Powell.—Report on cases of typhoid fever.

H. L. Reddy.—(a) Cæsarean section in a girl of 14 years; (b) Elephantiasis.

W. W. Chipman.—Vicarious hæmorrhage, Hæmatemesis.

H. S. Mucklestone.—Streptococcus mucosis from cases of suppurative otitis media.

Hanford McKee.—Trachoma bodies.

Living Cases.

Geo. H. Matthewson.—Result of exenteration of the orbit, showing the cosmetic result of this radical operation. The whole eyeball had been removed together with the outer two-thirds of the eyelids for rodent ulcer.

E. Hamilton White and W. H. Jamieson.—Cases showing radical mastoid operation. Dr. White showed some beautiful morbid specimens of the operation.

A. R. Pennoyer.—Fracture of the femur treated by Arbuthnot Lane's method; also X-ray plates before and after operation. In the discussion Dr. Armstrong reviewed the different methods of treatment in fractures.

D. A. Shirres.—Case showing the value of mesmerism in diagnosis.

A. E. Garrow.—Partial gastrectomy and pylorectomy. Two cases with specimens.

A. R. Pennoyer.—Old dislocation of the shoulder joint with fracture through the greater tuberosity. Operation described. Good result.

Colin R. Russell.—Three cases illustrating Edinger's Ersatz theory of tabes dorsalis.

D. A. Shirres.—Five cases illustrating injuries to the brachial plexus.

A. C. P. Howard.—(1) Microcephalic idiocy—child 9 months, Hebrew, sutures ossified, fontenelles closed; (2) True amaurotic family idiocy.

E. Hamilton White.—Chronic sinusitis.

J. Alex. Hutchison.—Dislocation of Semilunar cartilage.

J. M. Elder.—Excision of astragulus.

W. G. M. Byers.—(1) Case illustrating the good effect obtained by securing the tendons of the recti muscles during enucleation of the eye; (2) Case of congenital microphthalmus.

J. W. Stirling.—Microphthalmus and congenital cyst.

J. Appleton Nutter.—(1) Case of sacroiliac strain showing treatment employed; (2) Tendon transfer, peroneal group made to assume role of the calf muscles; (3) Cure of double congenital club foot.

Norman Viner.—Cretinism, two cases.

Pathological Specimens.

Geo. E. Armstrong.—Carcinoma of ascending colon.

Geo. E. Armstrong, F. C. Finley and S. B. Wolbach.—Amœbic abscess of the liver originating in Montreal.

W. H. Tytler.—Typhoid perforation of the sigmoid; Cancer of the œsophagus; Malignant endocarditis; Carcinoma of appendix, (rare);

Bladder and kidney of a man who had chronic abscess of perinæum, 6 months standing; Ulcerative cystitis and right acute surgical kidney; Luetic aneurysm descending arch of the aorta; Abscess lung, girl.

W. D. McLachlan.—Variety of Specimens.

A. Lapthorne Smith.—Tubal pregnancy; Lacerated cervix with polypi.

J. Alex. Hutchison and S. B. Wolbach.—Carcinoma of the splenic flexure of the colon.

E. W. Archibald.—Undescended testicle.

W. H. Tytler.—Cancer of the gall bladder: Intussusception: Mesenteric thrombosis.

C. K. Russell.—Two specimens of the cord from patients dying of acute anterior poliomyelitis.

J. W. Stirling.—Microphthalmus and congenital cyst.

O. S. Waugh.—(a) Chronic myocarditis; (b) Streptococcic septicæmia, showing multiple thrombi of both ventricles; (c) Child's heart showing multiple mural thrombi of both ventricles; (d) Rupture of lung from accident, patient 58 years; (e) Lung from case of a boy crushed in an elevator.

W. G. Turner.—Sarcoma of vertebræ.

S. B. Wolbach.—(1) Lipoma of the spinal cord in an infant 10 months old with cleft palate—very rare; (2) Malignant struma, elderly man which simulated aneurysm; (3) Cirrhosis liver—syphilitic—skull shows tertiary lesions, anomaly, aortic valve; (4) Carcinoma of the liver, secondary from carcinoma of the stomach, simulated abscess; (5) Multiple hernia of the substance of the brain into the arachnoid villi; (6) Massive softening of the brain due to thrombosis; (7) Cord tuberculous meningitis; (8) Vertebral column from a case of tuberculous meningitis; (9) Hob-nail liver; (10) Prostatic hypertrophy with hypertrophy of the bladder; diverticula of the bladder; double pyelonephrosis; (11) Banti's Disease—spleen 4,050 grammes; (12) Branched Meckel's diverticulum; (13) Enterolith in an inflamed and perforated Meckel's diverticulum; (14) Injection after delivery—uterus—a placental site deeply ulcerated; necrotic cervix; abscess of the corpus luteum; (15) Lung, elderly person who had chronic myocarditis and chronic nephritis, shows marked emphysema and emphysemphatous bullæ of unusual size; (16) Malignant endocarditis, with a mycotic aneurysm of the ascending aorta, purulent pericarditis; (17) Malignant aortic endocarditis, with mitral stenosis, man aged 25 years; (18) Extensive prolapsed rectum. Rare specimen. A more recent prolapse upon a chronic prolapse. Cause of death, rupture of the sigmoid flexure; (19) Jaundice, short duration. Alcoholic and syphilitic history. Liver 905 grammes.

W. S. Baird.—(1) Spleen and glands from a case of lymphatic leukæmia; (2) Heart and pericardium in a case of acute plastic pericarditis; (3) Carcinoma of the fundus of the gall bladder, with metastese in the liver. Clinical history indefinite. Autopsy revealed the condition; (4) Stomach and liver showing carcinoma of the lesser curvature and glands, with metastese in the liver; (5) Specimens from a woman five months pregnant, dying of condition diagnosed as eclampsia. At autopsy, acute cerebrospinal meningitis of pneumococcic origin; (6) Specimens from child, ten weeks, intensely jaundiced, congenital obliteration of the bile passages; pancreatic duct intact and opening into the duodenum. No bile ducts; (7) Recurrent carcinoma tumerus, showing metasteses. Case of Dr. Elder's: cyst from brain of same case. Had a history of epilepsy; (8) Mucous degeneration of the appendix.

The thanks of the Society are due to the past President, Dr. Hutchison, for the fine picture of the late Dr. George E. Fenwick, one of the early members and a past president. He was a great surgeon, and shed lustre alike on the General Hospital, the College, and the Society.

We have also to thank our fellow member, Dr. Donald Hingston, for the speaking likeness of his illustrious father, the late Sir William Hingston, "an affable and courteous gentleman." On perusal of the old minutes, I find that he was one of the most energetic of the early members; in fact, it was partly due to his efforts that the Society was resuscitated. He was a man of many parts. In his time he had been mayor of Montreal, senator of the Dominion, bank president. On three different occasions he was elected President of this Society, in 1866, 1873 and 1880. No man before or since has held the office more than twice.

I might say here, that some of the pictures of the early presidents are still lacking. We should see that the list is completed.

We have delved into the glorious past, we have discussed the present. What shall we say of the future? Never in its history has the Society had a better outlook. There are to be some symposiums on different subjects. The hospital clinical evenings are to be revived. A new projection instrument has been acquired, which will add materially to the interest of the meetings. Some eminent men from other places will be heard during the season. An interchange of ideas is stimulating.

Our lease of these rooms expires next spring. Shall we renew or shall we make other arrangements? The outlay here is considerable. Can we, for less money, get more than we are getting now? The rooms are practically used only twice a month. In his address of last year, Dr. Hutchison referred to the possibility of making some arrangement with the University Club, where the rooms might be of a more homelike character and more utilized than at present. A committee appointed by

your Council has discussed the matter with a committee of the University Club. Before the present session is over, your committee hope to be able to lay before you some definite scheme for your consideration.

As a Society we should take cognizance of public health questions. We should use our knowledge and influence in securing a modern water supply. We should demand a purer quality of milk, collected and delivered in a sanitary manner. We should emphasize to the city and to the state the crying need for homes and hospitals for our most unfortunate fellow-sufferers—the incurable poor. Let us insist on cleaner streets, on healthy hygienic houses for the labourer. Typhoid epidemics should be things of the past.

The public are beginning to understand the doctor better. "There is now the infinitely broader relation of sympathy and confidence between the entire community and the whole medical profession engaged in a common work of discovering and removing the causes of disease. Hygiene and preventive medicine are the fields wherein the greatest triumphs of the future, as of the past, are to be achieved."

THE CURE OF SYPHILIS.

BY

F. McKELVEY BELL, M.D., Ottawa.

President's Address before Ottawa Medical Society, November 25th, 1910.

A few short years ago and the announcement of such a title might have brought a smile of incredulity to the faces of most of us, and yet the past quarter century has been so replete with surprises for the medical world that we gaze into the future with exopthalmic eyes. The wheels of progress have carried us past antitoxin, vaccine therapy, Murphy's enteroclysis for the cure of peritonitis, X-ray therapy, the skiagraph, Beck's bismuth paste for the cure of chronic sinuses, Flexner's meningococcic serum, and a host of other important stations on the road to the "Ultima Thule," and still others loom in sight. Perhaps the most startling and uncanny of recent medical discoveries is that of the growth of the body tissues after removal, when placed in suitable media. It is rather gruesome to feel that one's kidney may go on growing on the shelf while all that was really mortal has been returned amid tears and flowers to the dust from whence it came.

And yet, great as each and all of these achievements have been, there is little doubt that for the good of long suffering humanity they have been eclipsed by the recent discovery of the cure of syphilis by Dr. Ehrlich, of Frankfort. Surely the prayers and the gratitude of a

multitude shall follow this great man and his worthy assistant, Dr. Hata, who through years of earnest, tedious labour, often in the throes of great discouragement, struggled onward and upward towards their goal.

Syphilis, the scourge of the ages, the "bete noir" of the medical profession, and the horror of the laity, has fallen under the stroke of a master hand. A few years hence and it is highly probable that locomotor ataxia, cerebro-spinal lues, general pareses, and the host of other nervous affections following in the wake of their great leader will become as rare as they are now common. Mercury and potassium iodide have so long been associated with the treatment of this dread disease, because we had no better remedies, that it seems like parting with old friends to discard them now, and yet it will not be long before they will be laid upon the shelf of the syphilographer, and the cobwebs of time will cover them with their inevitable film.

When, owing to the absence of antibodies, Dr. Ehrlich saw that there was little to be gained from serum therapy in the treatment of diseases due to animal parasites such as malaria, amœbic dysentery, syphilis, etc., he cast about for some chemical substance which, while powerful enough to destroy the parasite in the blood, should not be destructive or injurious to the host. This was a rather fine distinction, and one requiring considerable discrimination; but about this time atoxyl, an empirical arsenical compound, came into use as a remedy in sleeping sickness and furnished the key to the chamber of mystery. Atoxyl became the starting point for other chemical variations of arsenic, and one can imagine the tediousness of the work and the dogged determination of the investigators when one hears that six hundred and thirty substitution products were evolved and all thoroughly tested on animals artificially inoculated to find only four of any use as parasiticides. These substances are: acetyl-atoxyl, arsenophenylglycin, tryparosan and diamidodioxy-arsenobenzol; the last preparation being arbitrarily designated "606" by Ehrlich; and "606" is the *raison d'être* of the present paper.

There was one great difficulty which stood in the way of successful therapy with these preparations. It was found that if a cure were attempted with repeated small doses that animal parasites quickly acquired a species of immunity and, as if that were not sufficient, transmitted the immunity to their progeny. If self-preservation is the first law of human nature, it seems that we are not appreciably in advance of the spirochete in this respect, for not only do they protect their own lives, but even put some human beings to shame in the consideration they show for their offspring. The goal, therefore, became to find some parasiticide which would at a single dose, or at most a very few doses,

produce absolute destruction of all the invading organisms. When we bear in mind the first restriction, that it must not injure the host, this became a problem of considerable magnitude; and yet, impossible as it at first appeared, Dr. Ehrlich and his assistants not only attempted it but succeeded in this remarkable achievement.

It is interesting to note, as an instance of heroism and self-sacrifice, that Prof. Ehrlich's assistants in order to protect their patients from unknown danger were the first human beings to submit themselves to the test. No Victoria Cross decorates their manly bosoms, no vast multitudes cheer their onward march through the city streets, but a silent tribute of respect and admiration greets these heroes of the laboratory. They did not dare death in the hot blood of battle; no glamour of romance would mitigate their doom, but they faced it silently, fearlessly, nobly in their quiet laboratory room. Since that time, at least fifteen thousand infected individuals, in all stages of syphilis have been treated, and with almost universally good results. When men of international reputation, such as Neisser, Iversen, Finger, Wechselman, Michaelis, Alt, and Fordyce, have all given the most encouraging reports, we may be pardoned for becoming enthusiastic.

"606" is a fine yellowish powder put up in vacuum tubes containing from .3 to .9 gms. It oxidises rapidly on exposure to air, and when dissolved in water forms a strongly acid solution. The injection of this acid solution is extremely painful. It may be converted into a neutral solution according to Wechselman's method, or as an alkaline salt, according to the method of Alt.

Doses of from .2 to .9 gms. have been given, the former being usually insufficient and the latter unnecessary. It is fairly well established now that the ordinary dose for adults should be .6 gms. In some early cases it was found necessary to give a second dose, because at first there was a healthy tendency to err on the side of safety, and the maximum dose had not yet been determined.

As much as 1.5 gms. have been given without appreciable ill effect. The remedy has been administered in several different ways, and each has its enthusiastic advocates. Some inject it into the venous system direct; others give deep intramuscular injections; others subcutaneous injections; and still others combine the intravenous and deep muscular methods. The critics of the intravenous method claim that the drug is eliminated too quickly to have a permanent effect on chronic lesions. Elimination takes about four days by this method. It is painless, but not free from the danger associated with all intravenous injections. The deep muscular injections are slowly absorbed, are very painful, and may form an abscess or a local depot for absorption. The subcutaneous

method is not so painful, is simpler, and the chemical can be easily removed if symptoms of poisoning supervene. This method has been used almost exclusively in the cases of syphilitic skin rashes treated by Dr. Fordyce, of New York, and with astonishing good results.

The preparation of a dose for injection demands considerable care and takes about an hour. The powder is dissolved by trituration in two c.c. of ordinary sodium hydroxide solution. This forms a brownish liquid, and by the addition of glacial acetic acid, drop by drop, a canary yellow precipitate is deposited. This is dissolved in one to two c.c. sterile water and is neutralized by the addition of a few drops of ten per cent. caustic soda or acetic acid; it is then centrifuged, the supernatant fluid is pippeted off and sufficient normal salt solution added to make 10 c.c.; this is then drawn into a Luer syringe (with long needle attached) and is ready for use. The injection is made subcutaneously, just below the scapulæ, half into each, and upon the care with which the solution has been prepared depends the amount of pain produced,—if it is not absolutely neutral in reaction and perfectly triturated the pain will be more severe. A slight swelling arises at the point of injection, and increases for about 10 days, then remains stationary about one week, and gradually subsides.

There is usually a temperature of from 100 to 101 degrees lasting one or two days. Some individuals suffer considerable pain, requiring morphia; others do not appear to suffer at all. There may be an urticarial eruption but no permanent ill effects have been noted.

The "606" seems to be equally useful in primary, secondary, and tertiary lesions; the skin lesions particularly show marked and rapid results. Mucous patches clear up in three or four days; papular syphilides in ten days to six weeks.

One of our old professors used to admonish us in his earnest way: "Be sure you do the patient no harm." And this admonition brings us to another interesting point. Is Ehrlich's preparation injurious or dangerous to life? It would be indeed strange if such a powerful medicament were entirely free from danger. Practically all of our potent remedies possess an element of danger: strychnine, pilocarpine, antitoxin; and hence we are not surprised that with "606" there are several contraindications. Ehrlich has warned the profession that his remedy must not be used in organic heart disease, retinitis, kidney disease, or in advanced nervous affections, such as advanced tabes or cerebro-spinal lues; and yet in spite of this warning many have gone contrary to his commands, and a few deaths have resulted. Fortunately they have been very rare, but where this has occurred the remedy should not be condemned as much as the over enthusiasm of the heedless. Some

experimenters claim wonderful results in tabes; some have gone so far as to state that after injection with "606" the reflexes have returned. It seems incredible that this should be the case in destructive lesions of the central nervous system, and yet it is possible that before the disease is too far advanced it may be arrested or slightly improved. The spirochete disappear from the lesions, all varieties, in from one to three days, or if they are still present at the end of this time Ehrlich believes that the dose was too small.

The Wasserman reaction has been of incalculable assistance in gauging the dose and in estimating the necessity for a second dose. In the cases observed in New York some months ago, the Wasserman was positive in all before the administration of "606" (fourteen cases, Dr. Fordyce), in three it remained positive one month after, but in the other eleven cases it became negative within from 19 to 21 days, and has remained so up to the time of writing. It is thought that in the first three cases the dosage was too small, as the experimenters were inclined to be cautious until they felt sure that there would be no ill results. The Wasserman reaction is fairly diagnostic of syphilis, and in all cases where it is positive we have direct indication for the use of Ehrlich's remedy,—always remembering the restrictions with regard to organic diseases. On the other hand, if the blood be drawn within a few weeks of the administration of mercury we are likely to find a negative reaction, and hence be deceived into thinking our patient cured. If the cure has not been complete, within six weeks after discontinuance of mercury, the reaction will again become positive. The Wasserman reaction among other revolutions has upset some of the dearest laws of our early student days. Profeta's and Colles' laws of immunity have been shown to be fallacies. The Wasserman reaction is present in the apparently healthy child born of a syphilitic father. It is present in the apparently healthy syphilitic mother; and in at least one instance, where the widow of a deceased syphilitic remarried a healthy man, she afterwards gave birth to a syphilitic child. It is sad to have the teachings of our youth annulled, to have our airy castles come tumbling about our ears, but when we arise crumpled, but purified, it gives us something to be thankful for,—that we have clearer vision and that we have strong arms and minds to build more.

One more doubt arises in our mind with regard to "606." Will the cure be permanent? Still another. Will there be remote ill effects upon the body not yet demonstrable? To the first of these questions there is no definite answer; time alone can show: but the fact that the Wasserman reaction disappears and, where the dose has been sufficient, has remained negative gives good grounds for the hope that the cure

will be permanent. So far, ill effects have not been noted where proper care was used in administration, and particularly where Ehrlich's perfected preparation was used.

To the first question there seems to be another answer,—something which indicates too that permanency and completeness of cure have been accomplished. The roué will look upon this as an unfortunate defect. It seems that a patient treated and cured by "606" may become reinfected with syphilis.

TYPHOID PERFORATIONS AND PERFORATIONS OF THE GALL BLADDER.

BY

GEORGE E. ARMSTRONG, M.D.

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Perforation of the intestine in typhoid fever demands our most careful study because of its frequency and danger. Physicians and surgeons are together bound to do their utmost to lower the high mortality-rate that obtains at present in this the most lethal of all the complications of typhoid.

Osler says that one out of every three deaths occurring during typhoid fever is due to perforation, and this estimate of its frequency is confirmed by the studies of the late J. Allan Scott. If the same percentage of deaths occurs in Canada as is estimated by Brown and Taylor to obtain in the United States, we have 1,875 deaths each year in our Dominion from typhoid perforation.

The locus is generally in the terminal two feet of the ileum, but, of course, it may occur at any part of the ileum, jejunum, large intestine, or appendix. The pathogenesis of typhoid perforation is well known. The coagulation necrosis of the lymphoid tissue opposite the mesenteric attachment, where the blood supply is poor, has been clearly described by many writers.

The problem before our profession is to lower the mortality rate: therefore, the first question is, What are the causes of the high death-rate in typhoid perforation?

1. The condition of the patient at the time of its occurrence. Towards the removal of this cause we can do little, although it adds greatly to the difficulties of recognition.

2. The difficulties in diagnosis. This is almost the whole question

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at the present time. Once perforation has occurred, we may agree pretty well on the remedy to be applied and on most of the details of carrying that remedy into effect; but how to make the diagnosis—that is the question above all others in typhoid perforation.

To begin with, let us clear the ground of one or two erroneous ideas. We must not expect perforation of the intestine in typhoid to be announced by definite and distinct symptoms. So long as we look for the same abrupt onset that takes place when a stomach or appendix ruptures in a patient who is in full health at the time, and for symptoms that are unmistakable, so long we may go on as we have been doing, and make our diagnosis when it is too late to be of benefit to the patient.

My second point is that we must clearly appreciate the difference between perforation and peritonitis. The time has passed when we could say that perforation could only be recognized by the resulting peritonitis. A third-year student can diagnose peritonitis; the master should be able to diagnose perforation.

It is generally a good rule to doubt a diagnosis when the symptoms lack in harmony, but in typhoid perforation the absence of harmony is a diagnostic point in favour of perforation. The change for the worse in the patient is often out of all proportion to the abdominal symptoms. The first symptom is pain, and, as a rule, it comes on suddenly. Abdominal pain is the danger signal, and should always receive immediate attention. In rare cases the pain comes on gradually; this is the exception, however. It is commonly referred to the lower abdomen, often to the right side, but may be referred to the umbilical or epigastric regions. Tenderness is usually present, and at first is localized. The initial pain and localized tenderness are the most important indications of perforation, and should be considered and differentiated from the more widely diffused pain and more generalized tenderness that appear later, and indicate the presence of peritonitis.

Rigidity and muscle spasm are now to be looked for. Greater resistance of one rectus muscle is significant. The difficulty is that typhoid patients often complain of the abdominal pain, and are generally more or less tender in the right iliac region. A differential point is that the pain and tenderness of perforation are associated with an altered condition of the patient. The nurse or the friends generally notice that something has occurred. The expression is different. There may be a clammy perspiration. If the pain, tenderness, and rigidity are accompanied by nausea or vomiting, as is the case in a considerable percentage of cases, their importance as a diagnostic sign is greatly enhanced.

One should not conclude that there is no tenderness present without

a rectal examination. In some cases the perforated loop lies low down in the pelvis. The patient may then not complain much of pressure upon the abdomen, but forward pressure of the finger in the rectum will at once cause him to cry out. It is in these cases that complaint may be made of frequent and painful micturition.

Later on, when the infection of the peritoneum has become diffused, and peritonitis has developed, careful inspection may note lessened abdominal movement during respiration, particularly of the lower abdomen and in men. The absence of liver dullness is only of value when the abdomen is quite flat, and especially if its presence has been previously noted. Alteration in the pulse, temperature, and respiration may be confirmatory, but it is often remarkable how little they are disturbed. The blood pressure is sometimes increased. I have not found the presence or absence of leucocytosis a symptom upon which much reliance can be placed. It may be present without perforation and absent when perforation is present.

None of these symptoms are new. They are mentioned in all text-books. The point is to be on the alert, and not allow them to pass unnoticed.

There were treated in the Montreal General Hospital from 1897 to May, 1910, 2,051 cases of typhoid fever. During this period there occurred 93 cases of perforation. In this series, then, perforation occurred in 4.53 per cent. of the cases. In addition, I operated upon three cases of typhoid perforation in another hospital and upon one case in a private house; of these four, three recovered. We have, then. 97 perforations, of which 78 were operated upon, and 24, or 39.76 per cent. recovered.

If we now examine the statistics for the various years, we find that the percentage of recoveries has steadily increased. During the year 1909 there were 16 perforations; 9 were operated upon, and 9, or 56.25 per cent., recovered. Our figures for the year 1909 and four months of 1910, or up to May last, are the best of all. During this period there were 22 perforations, 19 of which were operated upon, with 9, or 47.36 per cent., recoveries. In this series of 22 perforations there were two very promising cases lost, apparently, by delay in obtaining consent after the perforation was diagnosed.

Annual deaths in Canada from typhoid fever....	1,875	
Montreal General Hospital, 1897 to May 1910:		
Cases of typhoid	2,051	
Cases of typhoid with perforation	93	(4.53%)

Cases of perforation in Montreal General Hospital.	93
Author's cases outside hospital	4
Total cases of perforation	97
Cases submitted to operation	78
Cases not operated on	19
Recoveries after operation	24
Percentage of recovery (24 out of 78)	30.7

Recent Results.

Perforations, January 1st, 1909, to May, 1910	22
Submitted to operation	19
Recoveries	9
Percentage recovery (9 out of 19)	47.3

Type of Fever in Which Perforation Occurred.

Severe	50
Moderately Severe	20
Mild	1
Ambulatory	6
Type not described	16
	93
Associated with severe hæmorrhage	25
Multiple perforation—6 cases (per cent.)	7.7
Secondary operation for secondary perforation in 4 cases Recovery	1

The increased percentage of recoveries is, no doubt, in part due to the character of the epidemic, but chiefly to earlier diagnosis and earlier closure of the opening. The earlier diagnosis has been due largely to the development of the idea among the resident hospital staff that it is a serious reflection on their skill and professional attainments to fail to recognize a typhoid perforation, no matter how slow and chronic may be its appearance. The final step towards lessening the mortality-rate in typhoid perforation is the recognition by every one of us that it is a serious and humilitating oversight to fail to recognize a perforation when it occurs.

The difficulties are greatly increased by the dull and apathetic state so common in typhoid, but these difficulties should only stimulate us to greater watchfulness.

I think it may be said that the diagnosis is, in many cases, to a certain degree uncertain. For this reason, in all cases in which we think a perforation is present, but where there is a reasonable doubt, an exploratory incision is to be recommended. I have twice opened the abdomen without finding any perforation. So far as I could observe, no harm resulted. This exploratory incision, undertaken after due and careful consideration, may sometimes save a life.

While it is quite true that the earlier the perforation is closed the more limited is the infection and the better the prognosis, yet some of our cases have been operated upon and have recovered when the condition, because of delay and advanced peritonitis, has seemed almost hopeless. Our experience in these cases would indicate that we are not justified in withholding the only chance there is unless they are really *in extremis*.

It may be said, I think, that if perforation occurs into the free peritoneal cavity the patient cannot recover unless the opening is closed. The only perforations that do not prove fatal unless closed by the surgeon are those occurring in the large bowel and between the layers of the mesentery. It has been demonstrated at the operating table that a small perforation in the small intestine may be temporarily closed by omentum, but that such cases would have recovered if they had been left alone is open to very serious doubt.

I have opened one abscess in the loin—post-typhoid—that seemed clearly to have been secondary to typhoid perforation of the colon.

If now we analyze our cases we find that perforation is more common in the severe forms of typhoid. Fifty of the perforations have occurred in cases described as severe, twenty in moderately severe cases, and one in a mild case. Six perforations occurred in ambulatory cases, and in one of these it seemed highly probable that perforation had occurred sixty hours before admission to the hospital. Strange to say, this man recovered.

Of the 97 cases in which perforation occurred, only 78 were submitted to operation. Nineteen cases were not operated on for various reasons, the chief being failure to obtain consent from the patient, parents or guardians, the desperate condition of the patient, and non-recognition of the lesion.

In several instances the patient's chances have been lessened by the delay in getting consent. One conspicuous example was a man, a patient in the Typhoid Emergency Hospital. The perforation was promptly recognized, and the patient sent to the Montreal General Hospital. He then refused operation, and insisted upon being removed to his home in a distant part of the city. At his home better counsels pre-

vailed, and he was brought back to the hospital. Two long rides in the ambulance and a delay of twelve hours changed an early promising case into an all but hopeless one. These delays from failure to obtain consent are of too frequent occurrence, one reason probably being that we do not promise enough, and one of my objects in this paper is to show that our extreme pessimism is wrong, unscientific, and not sustained by our later experince. Surely, if 50 per cent. of these desperate and otherwise hopeless cases can be saved, our pessimism should give way to a good, vigorous optimism.

Twenty-six of our cases of perforation were associated with hæmorrhage. Among these are not included instances of small blood-stained stools but only those cases in which the quantity of blood lost amounted to several ounces. As a class they are unfavourable. Three of them, however, recovered.

In six cases, or 7.7 per cent., more than one perforation was found at the time of operation. The perforations were generally not far removed from each other.

In four cases a secondary operation was undertaken for second perforation. One of these recovered. In two, recovery would have followed the second operation had not a third perforation occurred—in one case seven days after the second operation. In one case two operations were performed. At the first operation one perforation was closed. At the second operation two perforations were closed. The child finally died, and at the autopsy the lower two feet of the ileum were necrotic, twelve perforations being counted.

Hæmorrhage and perforation occurring subsequent to the operation for closure must be placed among the causes contributing to the high death-rate. Can they be prevented?

This raises one of the questions of technique. Is it enough to simply close the perforation found? What other procedure may be adopted?

It has been my practice to close the opening in the simplest way, that is, by one or two sutures through all coats, and a row of Lembert sutures placed transversely at right angles to the long axis of the bowel. I then infold in a similar manner with a row of Lembert sutures all the ulcers found to have a thin, suspicious, necrotic-looking base. Two alternatives suggest themselves, and have been carried out in a few of our cases. In two the suspicious portion of gut was resected with end-to-end anastomosis. They both died. In two the suspicious-looking gut was delivered, and cared for outside. The gut was wrapped in gauze, and allowed to rest on the abdominal wall. These two, after doing well for a time, eventually succumbed, one of them from pneumonia.

Resection should probably be reserved for special cases in which the

danger of further perforations over a considerable section of intestines seems imminent, and the patient's general condition warrants undertaking an operation that requires a little more time and a little more shock. I have not seen a report of any series of cases treated by resection, but I am under the impression, from conversations held with surgeons, that resections in typhoid perforations have not been followed by any improvement in the mortality-rate. I believe, however, that it should be carried out under favourable circumstances and in selected cases.

The variety of anæsthesia to be employed is a question of more than passing interest.

We will all, I think, agree that all preparations, including the wash-up, should be done before any general anæsthesia is used.

Local anæsthesia possesses many advantages, and should be used whenever possible. In the case of foreigners who cannot understand our language, and in children, it is difficult, but it undoubtedly should be the method of choice. I must say, however, that most of my cases have been operated upon under general anæsthesia, and I cannot say that I have seen much harm from it. On the contrary, these cases are almost all surprisingly well during the ensuing twenty-four or forty-eight hours. If the patients are vomiting, this is a very forcible reason for using local anæsthesia, as we thus lessen the danger of an aspiration pneumonia.

There is one point to be remembered when operating for typhoid perforation under local anæsthesia, and that is, that when the abdomen is opened there may not at first seem to be any indication that a perforation has occurred. No gas or fluids may escape, and, so far as can be seen through a small incision, the peritoneum and intestine may present a nearly normal appearance. This occurred to me on one occasion. The symptoms in this case had been unusually well defined, and that there was a perforation seemed almost beyond question. On pulling up the lower end of the ileum the patient complained so loudly that I gave a little ether. Then, when the ileum was finally delivered, a small perforation was found nicely closed by adherent omentum. If this had been overlooked, doubtless a leakage and peritonitis would have followed soon afterwards.

The subject is one of great interest. The death-rate must necessarily remain high, but watchfulness, exploratory incisions in doubtful cases, and prompt closure should save a goodly number of typhoid perforations.

I take this opportunity to report a case of typhoid perforation of the gall bladder.

The patient was a little girl 10 years of age, referred to me by Dr. Molson. The typhoid had been of moderate severity. At the end of

the third week, after three days of normal temperature, she complained of pain in the right hypochondrium. The following day an ovoid swelling appeared in the situation of the gall bladder. It felt as large as a turkey's egg, was exquisitely tender, and moved up and down during respiration. It was accompanied by a rise of temperature and acceleration of pulse. Under local applications the tumour became less tender and perhaps a little smaller. There was no jaundice. On the fourth day of the tumour another accession of pain decided me to operate. I opened directly into an abscess cavity, and in the abscess lay the gall bladder perforated in three places. The walls were everywhere necrotic. There were no stones. I did a cholecystectomy, and the little girl made a smooth and uneventful recovery.

The following is the report of Dr. Wolbach, pathologist in chief to the hospital.

The specimen is a slightly enlarged, thin-walled gall bladder 10 by 4.5 cm. in its greatest diameters. The outer surface is much congested and presents numerous yellowish raised areas, in a few of which there are perforations extending through the wall. The mucosa is dark red, and contains, in addition to the perforations, many ulcers, 0.1 to 0.5 cm. in diameter. The large ulcers have yellow necrotic bases with undetermined edges. The thickened floor and the surrounding puriform infiltration of these ulcers produce the swelling noted on the external surface of the gall bladder.

Incision through the serous coat into the wall of the gall bladder in the neighbourhood of the perforations and ulcerations shows extensive œdema and puriform infiltration into the surrounding tissues.

Microscopic Examination.

The epithelium of the mucous membrane is nearly wholly absent; a few islands of epithelium represent deeper parts of folds in the mucosa. The line of the basement membrane is everywhere intact, except over the ulcers; so that the general loss of epithelium is probably post-operative. Throughout the sections examined there are evidences of œdema and many small areas of hæmorrhage.

In thickened parts of the wall there is marked infiltration with lymphoid and plasma cells, and large mononuclear cells, many of which are finely vacuolated (compound granular cells).

Young connective tissue cells are present throughout the sections where there is œdema. The large mononuclear cells (endothelial cells) are occasionally grouped in large numbers about vessels, in lymphatics, and in areas of hæmorrhage.

The above changes are most marked in the outer half of the gall-bladder wall—that is, subserous tissues and the elevated areas noted in

the gross specimen are due to necrotic areas in this region, surrounded by granulation tissue. Near one large necrotic area there is a large vein with an early organized and canalized thrombus.

In the areas of surrounding necrotic tissue there are many polymorphonuclear leucocytes, but even here the number is not greatly in excess of the large mononuclear cells.

A few short bacilli are present in necrotic areas (methylene blue stain). No bacteria can be found.

The blood vessels everywhere are engorged, but there is no evidence of recent thrombus formation.

Summary.

Necrosis of gall-bladder wall following marked infiltration of the outer half with lymphoid, plasma, and endothelial cells, in which respect it differs from an ordinary suppurative process. The extensive œdema is possibly due to thrombosis of vessels, though only a single organized thrombus could be found. The character of the cellular reaction supports the theory of a direct infection of the gall-bladder wall by the typhoid bacillus as against pyogenic infection, or infection secondary to a cholecystitis.

The only demonstrable bacteria in the lesions are bacilli consistent in morphology with the typhoid bacillus.

The route of infection could be either through the blood stream or through lymphatics from infected lymph nodes which may be incorporated in the wall of the gall-bladder.

DOUBLE RADICAL FRONTAL SINUS AND ANTRUM OPERATION.

BY

E. Hamilton White, M.D.

Read before the Montreal Medico-Chirurgical Society, November 18th, 1910.

The case which I show to-night was first seen in February, 1910, and gave a history of discharge from the nose and obstructed breathing for two years. A rather remarkable feature of the case was the apparent indifference of the patient to the symptoms. He had sought no relief from his nasal condition. There had been occasional headaches, but more often a dull, heavy feeling in the frontal region. He had some pain in the upper jaw, for which he consulted a dentist who saw the pus streaming into his pharynx, and urged him to have the condition attended to. The case, which proved to be a pansinusitis, was first treated conservatively by washing out the cavities, and incidentally the septum was resected submucously, as it completely obstructed the left

side of the nose in its upper part. Irrigation of the sinuses was kept up till June 17th, without any perceptible diminution in the discharge, —though headache or pain in the cheek was now absent.

The skiagrams show very well the shape and extent of the sinuses which are unusually large. Such plates are not only a valuable aid to diagnosis, but are most important in determining the type of operation best suited to the case. One of the plates, the lateral view, shows the anterior wall of the frontal sinus and the inner table or posterior wall, with a distance of almost an inch between them, representing the depth of the sinus which is much increased by the bulging of the anterior wall. In such a case, should the Killian operation have been undertaken, a very extreme deformity would have followed from the removal of the anterior wall resulting in depression of the forehead.

It was decided to leave the front wall and simply remove the floor, and, on June 17th, one side was operated on, and the second side done about a month later. Shock was severe after the first operation, but slight after the second. Although I was uncertain as to the result, the danger being that one may get pockets formed by the granulation tissue and retained pus in the upper part of the cavity, it has been very satisfactory from an internal as well as external point of view. The discharge has stopped almost entirely, though there is still some suppuration going on in the right side. It is, however, slight in amount and forms a crust rather than discharge.

The patient says his head feels much better and he has lost the heavy feeling. On enquiring as to the number of handkerchiefs used, he stated that before the operation he required four or five daily. At present, he states, that one satisfies his needs for a week, a statement which perhaps throws some light on his indifference to his nasal condition before operation.

H. S. Birkett, M.D., in discussing the case said: I think this case follows very opportunely on the work of our last meeting, first of all, demonstrating the practical value of radiography as applied to diseases of the accessory sinuses. Had one undertaken this operation in the usual way, without first having had both an antero-posterior and lateral radiogram taken, the results certainly would not have been as gratifying as they are at the present time. The occurrence of bilateral sinusitis is unusual, and further, it demonstrates to us that this extensive operation may be done with very little disfigurement. The adoption of Killian's method of operation is followed in both cases by such disfigurement as to cause the patient a good deal of mental discomfort. Dr. White has shown a great deal of judgement in having adopted the removal of the floor of the sinus rather than the anterior wall.

A CASE OF MILIARY TUBERCULOSIS OF THE CHORIOID.

BY

GEO. H. MATHEWSON, M.D., Montreal.

Read at Meeting of Montreal Medico-Chirurgical Society, December 3rd, 1910.

In February, 1907, I published in the MONTREAL MEDICAL JOURNAL, two cases of miliary tuberculosis of the chorioid.

In one of those cases the result of the ophthalmoscopic examination confirmed the diagnosis of general miliary tubercle which had been strongly suspected by the clinician, but in the other case the clinician was entirely at a loss as regarded the etiology of the general symptoms until the results of the ophthalmoscopic examination were made known to him. In the third case, which I will report briefly, the diagnosis was also made on the results of the fundus examination.

On September 28th, 1908, W. V., a male infant, aged 17 months, was admitted to the wards of the Montreal General Hospital on account of paralysis of the right arm and leg. The child, according to the mother's report, had been quite well until five days previously, when he began to be feverish and had diarrhœa, and later had convulsive attacks, but did not lose consciousness during these attacks. The paralysis developed on September 27th.

On admission the child was found to have hemiplegia and looked very ill, though well nourished. The lungs were clear on percussion and auscultation, though the respirations were quick and shallow. Circulatory system normal. There was diarrhœa, and the tongue was dirty. Temperature 100-103.

September 30th.—Condition very bad. The child was stuperose. Lumbar puncture was made, and the fluid obtained was clear. No tubercle bacilli could be found in the fluid. On this day I made an examination of the fundi and found the chorioid in each eye to be studded with many tiny tubercles.

The child died at 1 a.m. on October 1st. Post mortem examination showed widespread tuberculosis involving both chorioids, meninges, pleuræ and peritoneum.

FOUR UNUSUAL CASES OF ALBUMINURIC RETINITIS.

The cases which I am going to report are not remarkable because of anything peculiar in the nature of the ocular symptoms, but on account of something out of the ordinary in the individual affected.

The first case is of interest chiefly because of the extreme youth of the patient, who was only six years old.

The boy was admitted to the General Hospital on June 21st, 1909, under Dr. Blackader, through whose kindness I had the opportunity of studying the case. The history was as follows:—

O. S., a boy, six years of age, who had not had any of the ordinary diseases of childhood, had enjoyed good health until 5 months before his admission to the Hospital, when he began to complain of headache. The pain was chiefly frontal, was intermittent and worse at night. Two months after the onset of the headache he began to have attacks of vomiting, which became more frequent as time went on. The parents noticed at this time that the boy's eyelids were puffy. On the morning of his admission to the hospital he had a convulsive seizure which lasted 1½ hours. The urine was acid, its specific gravity 1018, with pus cells and albumin, but no casts.

On June 22nd I examined the fundi and found typical albuminuric retinitis in both eyes. This finding was of distinct value in excluding cerebral neoplasm. This is the earliest age at which I have observed the condition, and one of the earliest on record. C. S. Bull saw a case in a child of five years, while Anderson records one in a girl of nine; Lawson, one in a girl of twelve, and Holmes Spicer, one in a boy of ten. In 1900 I saw one in a boy of thirteen.

The second case is peculiar, in that it was seen in a woman after the birth of her child. Albuminuric retinitis is frequently seen during pregnancy, but this is the first case I ever saw occurring post partem. Mrs. P., 38 years of age, came to my clinic at the General Hospital on September 10th, 1909, complaining of poor vision. On examination it was seen that she had albuminuric retinitis in both eyes, with exudate hæmorrhages and typical stellate figure in the macular region. The urine was found to contain albumen and casts. Her vision was R.E.=6/18, L.E. 6/60. She gave the following history: Three weeks previous to her coming to the clinic she was delivered of a 7 months' child, which was dead in utero. During the pregnancy she had had no unusual symptoms, nor had she had any trouble with her eyes until the fourth day after her confinement, when she found on trying to read a book that she could not see the print. She had been married eleven years and had had three previous pregnancies, and the children are all living and healthy. The condition cleared up rapidly. While it is impossible to be sure that the retinal changes were not present during some part of her pregnancy, it is very likely they only appeared after delivery. At any rate there were no subjective symptoms until that time.

The next two cases are worthy of note because of the youth of the patients, but more especially from the fact that they were brothers.

On April 22nd, 1908, G. C., a young man, aged 19 years, was sent to

my clinic at the General Hospital on account of headache. On examining his fundi I found he had typical albuminuric retinitis in each eye. The urine was found to contain both albumen and casts. Six months later he died of pleurisy.

On January 6th, 1909, T. C., a boy of 17 years of age, and brother of the above mentioned, G. C., was sent to me by the physician who had sent the older brother, with the report that there were casts and albumen in his urine, and a request that I should examine his fundi. Here, again, I found typical albuminuric retinitis, although the vision was good. R.V.=6/6, L.V.=6/6.

On March 3rd, 1909, about two months later, the vision was reduced to ability to count fingers at four feet with each eye.

Both brothers had scarlatina, chicken pox, and measles in early childhood, and the younger one had pneumonia at the age of eleven. The mother stated that the scarlatina was so mild in character that a doctor was not called in.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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INFORMATION FOR READERS.

With the present issue the MONTREAL MEDICAL JOURNAL will cease publication. It has been acquired by the Canadian Medical Association. On January 1st, 1911, "The Canadian Medical Journal" will be issued as the official organ of the Association. For the past twenty-two years, and for a long time before that, under other names, the MONTREAL MEDICAL JOURNAL has endeavoured to present a true picture of medicine in Montreal, especially as it has been represented by McGill University. But the editorial board and the shareholders have arrived at the conclusion that something more elaborate should be attempted, namely, to present Canadian medicine as a coherent whole.

Accordingly, the profession in Montreal has transferred its journal to the Association, and along with it goes to the larger body a tradition which has existed, and grown, for nearly seventy years. The Association also receives the support of a large and important medical faculty, whose sole object is to further the science and art of medicine for the general good, and not for the advancement of local or individual interests.

For convenience of reference we set forth the ancestry and history of the MONTREAL MEDICAL JOURNAL in tabular form:

THE MONTREAL MEDICAL GAZETTE, Being a Monthly Journal of Medicine and he Collateral Sciences. Edited by Francis Badgley, M.D., and Wm. Sutherland, M.D.....Vol. 1, 1844-45.

The British American Journal of Medical and Physical Science. Edited by Archibald Hall, M.D., and R. L. Macdonnell, M.D.....Vol. 1, 1845-46.

The British American Medical and Physical Science Journal. Edited by Archibald Hall, M.D.....New Series, Vol. 6, Nos. 1-9, and Vol. 7, May, 1851 to January, 1852.

The British-American Journal, Devoted to the Advancement of the Medical and Physical Sciences in the British-American Provinces. Edited by Dr. Hall.....Vol. 1-3, 1860-63.

The Canada Medical Journal and Monthly Record. Edited by Robert L. Macdonnell, M.D., and A. H. David, M.D. .....Vol. 1, 1852-53.

The Medical Chronicle or Montreal Medical Journal of Medicine and Surgery. Edited by William Wright, M.D., and D. C. MacCallum, M.D.....Vols. 1-6, 1853-59.

The Canada Medical Journal and Monthly Record of Medical and Surgical Science. Edited by George E. Fenwick, M.D., and Francis Wayland Campbell, M.D.....Vols. 1-8, 1865-1872.

The Canada Medical and Surgical Journal. Edited by George E. Fenwick, M.D.....Vols. 1-16, 1872-1888.
With Vol. 8, there was a change of editors, Dr. George Ross and Dr. A. Molson being in charge. Vol. 11, Dr. Roddick editor in place of Dr. Molson. Vol. 14, the name of Dr. James Stewart was added to the Editorial Board.

Montreal Medical Journal:.....Vol. 17-39, 1888-1910.
Vol. 24, 1895-6, editorial staff consisted of Drs. T. G. Roddick, James Stewart, A. D. Blackader, George E. Armstrong, J. G. Adami, R. C. Kirkpatrick.
Vol. 27, 1898, Dr. G. G. Campbell was added to replace Dr. R. C. Kirkpatrick.
Vol. 28, 1899, Drs. William Gardner, F. G. Finley, Frank Buller, and H. A. Lafleur were added.
Vol. 31, 1902, Dr. F. J. Shepherd added.
Vol. 32, 1903, Dr. Andrew Macphail became managing-editor.
Vol. 39, 1910, Transferred to Canadian Medical Association.

Word has been received of the death of Dr. Harold Bertram Marchant, of Victoria, B.C. Dr. Marchant was a graduate of the Class of 1910 of McGill University, and during his undergraduate career took a first-class place in all his examinations. He was a popular student, and served on the staffs of many committees and student organizations. After graduation he was appointed to the out-door staff of the Montreal

General Hospital. He returned to his home in September, and after passing a brilliant examination before the British Columbia Medical Board was appointed surgeon to the company at Britannia Mines. It was while on his way to the mines by the overhead tramway that he was caught in the machinery and his skull fractured. He was brought to the Vancouver General Hospital, but died on the following day, Thursday, November 17th, without regaining consciousness. Dr. Marchant was 28 years of age and unmarried.

In the article upon "The Uses of the X-rays in Surgery," in the November number of this JOURNAL, by W. A. Wilkins, M.D., the author is made to say, "Congenital anomalies such as cervical rib, spina bifida, fractures and dislocations are generally a condition frequently mistaken for "sprained back." This should read as follows: "Congenital anomalies, (such as cervical rib and spina bifida), fractures and dislocations are generally made out, an important fracture being that of the transverse process, a condition frequently mistaken for "sprained back."

BABU BABBLINGS FROM BANKIPUR.

There is a man entitled Babu Ram Krishna Lal, who is apparently quill-driving in the Commissioners' Court in Patna, who knows all there is to be known about plague, and who casts out on the world three pamphlets, which have recently come to us, entitled: "The Pathogeny of Plague," "The Symptomatology of Plague," and "The Therapeutics of Plague."

Before giving to Canadian readers any of the valued secrets therein contained, we must express our regret that we have not yet obtained one other book which the author advertises in the following phrase: "The World Plague Penal Code." "It is in rhymic verses. It is a very humorous, interesting and instructive book. It will be printed within five months." He frankly states that he considers that medical men may read his works with suspicion, because they are the "outcomes" of a "non-professional man." But he naively says that "for full instruction of the plague matters a man ought to read all my books relating to them; for, they are scattered here and there, that is, at their proper places." In all of which Babu Lal, who is also known sometimes as Ram, probably speaks more truth than he thinks.

As we face "The Symptomatology of Plague," we have to wade through a considerable amount of print which does not convey much to us, inasmuch as, side by side, he prints English, Arabic, Persian, Sanskrit and Hindu, the general effect being a glorified edition of one of those much-beloved Kelly's Keys to the Classics, that we used to love. But we can

gather this much, that a bacillus is so "micron that he cannot be seen without a microscope. It is oval, and is of a white, red, blue, black, yellowish or greenish colour, or iridescent." It must be a terrible thing to be an Indian child in these days, because, doubtless, Ram can at all times quiet his small flock, not with tales of dragons and bears, but of bacilli, for he says "the bacillus has the functions of creeping, sticking and biting." More, this terrible beast finds that the things most suitable, agreeable and wholesome to it are "stink, narrowness, dimness, darkness, unventilation." He recognizes that the following elements are hurtful to bacilli: "Width, dryness and ventilation," and his anti-bacterial *piece de resistance* is "odour," by which he appears to mean perfume. It is not clear what particular brand of odour he makes use of, but if we judge from what he says, he must smell to heaven. He has noticed that the patients in the toxic stage show some such fatal signs as the following: "Indolence—the patient hates to toil and likes to lie down."

"Melancholy—the patient's face looks sorrowful. He seems like a fool."

"Lassitude—the patient feels his body and mind exhausted, without having done any work or labour."

Truly, this wrings the withers of most of us. If one might judge from these symptoms, the plague must have a wider distribution than we have previously supposed.

In his observations of the tongue, his description is "a treat o' richness." The furs on the tongue are calculated to make the Hudson's Bay Company purple with envy, for they are "white, red, blue, yellow or green." We think it is necessary to point out that when he refers to the wild delirium of the patient, he has no reference to the existence of intestinal parasites, although he states definitely that "the patient fights with his inmates."

Babu Lal's idea of bacteria is apparently something very fearful and wonderful, for if you wish to know how and in what parts of the human body the bacilli bite, read Proposition 25, which is reminiscent of the index of Gray's anatomy; and besides, one meets with some such terrible prognostications as this: "A burning pain on a part of an individual's body indicates the future appearance of a bubo." What an outlook for spanked offspring!

Conjunctivitis he finds generally "ejects the eye," whereas parotitis inflames "the auricular hall." Especially adapted to the use of writers of bogie books are his descriptions of the different bubos, of which the cervical is much fearful, the axillary less fearful, the popliteal a little fearful, while bubos of the outgland are evidently good fairies, for they

are not at all fearful. The "outgland" is not in our dictionary. To give an air of similitude to the whole thing there is a table, which consists of a list of the names of the swellings or bubos, prefaced by serial numbers and followed by percentage numbers. We defy the most carefully trained member of the Institute of Chartered Accountants to find any errors in this table, or, in fact, anything else.

There is a hopeful side to all this revelling in fearful signs and symptoms for susceptibility, or immunity, or both, can be acquired "by using, or not using flesh, or odour or both," (to a casual observer, this seems to include most of us!), and if you "observe properly the fur on the tongue, and know that this precedes the appearance of fever or bubo,"—though how you are to know it, heaven only can tell—"you can very easily recognize the plague and kill its germs without giving any trouble to its patient." This smacks strongly of the diagnostic methods of Christian Science, and even recalls the abortive treatment of typhoid fever. Babu Ganga breaks at times into verse, and one technical paragraph ends up with this beautiful couplet:

> "Ah! the name, PLAGUE, is itself a fright;
> How can I expect one, with him, will fight."

Truly, "breaks" is the correct term to express this change of pace.

Lal is not content with confining himself to plague, but he wanders into side paths, and talks of smallpox, which he says is the "poisonous effect of the natural absorption of the menses by the embryo and the fœtus," the latter of which, he says, is the same as the embryo with a little difference. The fœtus is known in Hindustani by some term which Babu Lal coyly abbreviates, as he says there is a great deal of obscenity in its full pronunciation. Our heartiest thanks, Ram!

Far be it from us to suggest that there is not a great deal of sense in this work, for the inhabitants of India are cautioned to use the following preventive measures:

1. Do not throw flesh into your house drain; 2. Do not throw flesh into the wells, the water of which you drink; 3. Do not deposit any dead body near the wells of the water of which you drink, but, too far, at least one mile from them. A mile is not any too far for us, thank you!

This true poet cannot subdue his liking for rhyming, for he breaks forth in song in the following stanza, which has not, perhaps, very much connexion with the subject in hand, but which has permitted the author to clear his mind of the very perfect rhyme which will be observed in the last two lines:

"Ah! if a flesh is never to be eaten,
And a dead body never to be hidden;
There should be no epidemic disease;
Thus all human race are to live with ease!"

We would gladly admit Babu's originality, but it was our privilege, some years ago, to be acquainted with one who lived in a Western Ontario town, who considered himself, after Tennyson's death, the Poet-laureate-elect of the British Empire. In his voluminous works, which were generally published in paper covers, and were religiously sent to, and as religiously acknowledged by, the secretary of the late Queen Victoria, we feel quite sure we have seen these last lines, and yet it may be that these two great minds have but followed the law of coincidence, when they lit upon the same great thought.

It is a pleasure in reading over the corrigenda of the book to find that on page 16, line 10, the author did not mean "grishahrishm," but that his meaning was "grishmagrishmata," a reading which, of course, indicates much more clearly his meaning. We confess that the reading "grishahrishm" had puzzled us greatly, but the correction renders the passage ridiculously easy. The book, he says, "passed through the press in my absence from Bankipur to Dinapur. I could not revise the proof sheets. The reader will pardon me for this negligence on my part." We can only hope for Ram Lal's sake, that heaven will pardon him as freely as we do.

Certainly the part of this classic work most imbued with common sense is that which is devoted to the therapeutics of plague, and the provisions thereof show how the call was given to Ram Krishna Lal to come to the help of his dying compatriots. "Having heard," says he, "that a bacillus is the cause of plague, and the house mouse is attacked with plague first of all, I believed that I should, in the like manner, die one day of this fatal pestilence." The above two hearsay statements led him to believe that the treatment must be antidotical and antiseptical, and in evolving this treatment he never failed to keep the following facts in view:

1. The poor are generally attacked with plague.
2. No physician ever attended them.
3. No compounder is to make mixture either of the homœopathic or allopathic medicines for them.

We are scarcely able to understand how these two last are compatible with the heavy death rate lately prevalent in India, but considering that this is a distinct outrage upon the poor, the brave Krishna has discovered special medicines for plague, "which can easily be procured and

administered to all plague patients by all men, even by a fool, without any harm at any time." Krishna goes on to say that he has had before him as a guiding light, a certain proverb, hereinafter mentioned. Persevering in his study with what pecuniary loss, labour and risk to his life, he modestly refuses to say, he at last, by the grace of God, succeeded in it; then like the lark at heaven's gate, he bursts out into this canticle: "Now, I, with ecstacy of joy, publish its results herein, for the benefits of the public"—ending with one more of his poetical strains which embodies the belief which has been his ideal:

"Where is a will, there is a way,
Its all obstacles removes away;
All difficulties do subject,
Put off all veils of its object."

No, dear reader, the printer has followed the text slavishly. We can scarcely say how keenly we feel the lessened interest which has been taken in Browning's poetry for the last year or two, but if any Browning Society wishes to enter once more upon a severe mental struggle, we will be pleased to send them by private post, not only this, but certain other verses which appear at intervals in these pamphlets. Nay, further, we are willing even to institute a prize competition with the view of discovering some of the hidden beauties which underlie these verses: in some ways "Sordello" has no passage superior to it.

The therapeutics of plague, as outlined by the author, are, perhaps, sensibly enough, Condy's Fluid, first, last, and all the time. Condy's Fluid is to be administered externally, internally, by all possible inlets to the body, by baths, by dressings, by gargles. This treatment has been anticipated in the Western States, where the "divine fluid" is considered a sure cure for "snake bites, dog bites, Injin bites and human bites." When vomiting occurs, the remedy is to be persevered with until the stomach tolerates it or until the patient recovers or dies. We suspect that there is some underhand agreement in Krishna's therapeutics, because we are told to beware not to use any other preparation but "that of Mr. Condy only prepared in London in a glass corked phial." It would be mere trifling to suggest that, according to the composition of this passage, it is Mr. Condy who is going to be sold in the corked phial; perhaps the purchaser also. Who knows?

There is a touching directness about our friend Babu Lal, which comes to the surface in such words as these: "The specific bacillus bites a man as other insects, such as lice, etc., do." Let no carping critic pretend that he does not know how lice bite, for unless we can start upon a

common ground, we shall clearly get no farther, and Krishna evidently expects that this touch of nature will make us all akin. It is almost pathetic to picture the good man as he goes about disinfecting places suspected of infection. "I saturate some cowdung cakes with kerosine oil, burn them, roll them with a stick on the suspected grounds, specially the corners, holes, and dark places of a room." This, no doubt, is the way in which the Patna Fire Brigade is kept up to its work, for our disinfector even disinfects "sputa, vomits and fæces by burning straw or hay around them." Then he remarks naively, "I do not touch them with my bare hand, but I remove them with some medium such as tongs, etc., otherwise they might attack me." Would that there were a sculptor who might give us a new Laocoon, not those magnificent men in the coils of the serpent, but the modern Krishna Lal with his tongs and their unsavory load which he holds at arms length, lest it attack him.

Finally, let us take to heart his last and one of his most important dogmas: "To immunise myself from plague I never use flesh, but ever use odour. If you wish the same do the same." Nothing could be plainer!

Like the careful householder, our best wine is kept to the last, and "The Pathogeny of Plague" is undoubtedly the gem of the collection. It is, as he says, an imitation of Euclid's Geometry, and is properly divided up into definitions, postulates, axioms and propositions, to which are added instructions and inferences.

His definitions have a jingle that is all their own; yet sometimes there is an Euclidean echo as in the following corollary: "If all other putrecible substances be given, each after each, to find a non-pathogenic bacillus in them, the result will be the same as above."

There is a distinctness about some of his definitions which makes them clear to the meanest intellect, as for example: "A house means a house inhabited by men." (By'r lady, we had thought he meant a dog-house!)

"A house drain means a drain of a house."

"The drain means a house drain."

"A house mouse means a mouse which inhabits a house."

"The mouse means a house mouse."

Samuel Johnson must have turned in his grave when the following definition was written: "Use, means to eat, drink, swallow, inhale or bathe with." But no one could quarrel with this: "Odour means that which emits a fragrant smell only from it."

A doubt crosses our minds as to the sex of the respected author; there is something feminine in his change of ground when he says: "Singular number may import plural number and *vice versa*."

"Masculine gender may import feminine gender and *vice versa.*"

The postulates begin according to tradition: "Let it be granted that," and among the things to be granted are such keen pieces of zoological observation as this:

"A house mouse generally runs throughout a house drain." And again: "Flesh is generally thrown into a house drain."

(Not in our house!—Editor).

The axioms contain such oracular sentences as the following:

"A bacillus must naturally die after a certain prescribed period; but if it dies before it, it dies of a certain cause."

The greater part of this volume is devoted to the propositions, and the only way in which we can give any idea of the completeness of the work is to give a proposition in full:

"Proposition 4.—Theorem. A house mouse conducts the bacillus from the stink of a narrow, damp, dark and unventilated house drain to the interior parts of a house, specially to the corners and the dark places of it."

"It is already proved that the bacillus is found in the stink of a narrow, damp, dark and unventilated house drain. Prop. 3."

"A house mouse generally runs through a house drain. Postulate 4."

"When a house mouse so runs, the bacillus, getting its most tasteful meat, that is, the body of the mouse (Axiom 6) sticks on it (Definition 9)."

"The mouse, having the bacillus thus stuck on its body, runs about the interior parts of the house (Postulate 5)."

"The bacillus, being interrupted by its antivital elements, separates itself from the body of the mouse and creeps from place to place in search of its vital ones (Axiom 7) and nooks at an angular or dark place of the house. Postulate 6."

"Therefore, a house mouse conducts the bacillus from the stink of a narrow, damp, dark and unventilated house drain to the interior parts of a house, specially to the corners and the dark places of it." Q.E.D.

If Andrew Lang wants some new material for his studies in ghosts, let him go to India. We can imagine his locks upraised, as walking peacefully around the corner he comes upon some bacillus "nooking at an angular or dark place of the house;" and there is surely no more fearful beast than your nooking bacillus! We question whether he would carry his scepticism any farther.

There is a strain of morality coming occasionally to the surface amid these flowers of geometry; such is the following, which is given in italics, and does not appear at all relevant to what immediately precedes or

follows it: "But the flesh deviates us from our straight line to a great labyrinth." Can it be that Krishna Lal, like St. Paul, has his thorn?

For a piece of close reasoning, we question if the comparison in "proposition 8, theorem," has ever been surpassed: Proposition 8, theroem, is this:

"The bacillus germinates in the corpse of a person died of plague."

"The corpse is a putrecible substance. Axiom 2."

"When a corpse putrefies a bacillus germinates in it. Axiom 3."

"The bacillus is found in the stink of a narrow, damp, dark and unventilated house drain. Proposition 3."

(We shall not again reproduce Proposition 3 for the sake of our readers, who will, by this time, doubtless, know it perfectly.)

"The constitutional arrangement of the component parts of a corpse resembles to the structure of a house drain with its stink in it. Definition 21."

"For, if not, compare them.

"Comparison: (a) The mouth and the anus=the two extremities of a house drain; (b) The passage from the mouth to the anus=the passage of the house drain; (c) The intestinal parts=the narrowness, dampness, darkness and unventilation; and (d) Stomach=the stink of a house drain. Definition 21.

"Therefore the bacillus germinates in the corpse of a person died of plague." Q.E.D.

By reading such a proposition as this, one realizes from such a sentence as comparison (3), that the abstract and the concrete present no difficulties to Krishna Lal. But he has evidently a poor opinion of his stomach!

It is very necessary to call the attention of the Customs Department of England to Proposition 13 theorem, which states: "If an article polluted with flesh and infected by the bacillus, be closely shut up in a portmanteau, and be never, in its way, exposed to the sunshine for a sufficient time, the bacillus shall be transported from India to England."

The last phrase smacks both of contravention of the Alien Labour Law, and of a sentence delivered at the Old Bailey. But, instead of a prayer for mercy upon its soul, the end is as usual, Q.E.D.

His instruction following this proposition, is, that "the travellers open their luggages and expose the articles therein to a clear sunshine for at least 24 hours." We can imagine the appearance of the Customs House at Dover, on a busy day, as the glad travellers wait until they have found 24 hours of English sunshine for their "luggages."

A little further on, there are instructions as to "isolating our house before it is infected by the bacillus." And the following sentence gives directions how to "insulate the house." The Bankipur Light, Heat and Power Company is not even allowed to tender.

"Proposition 15, theorem," has a Teutonic touch in "an English-fashion-built-bungalow;" but Krishna's pathology is not up-to-date, as in Proposition 24, theorem, he states that "the birds of the air are not attacked with plague." And the instruction to this doubtful proposition is given in the author's favorite mode of expression verse:

"Live like a bird when plague prevails;
A skilled doctor, to cure it, fails."

A suspicion arises that the Indian bacilli are given to round-about routes, for we find that "whenever a bacillus creeps into the stomach by the alimentary canal and bites it, the gastritis is found," and a further remarkable statement is made that "Whenever the bacillus gets into the lungs with drink or food and bites them, the pneumonitis occurs." It is now pretty well understood, by even the laity, that any one who does take the drink and food into the lungs may have trouble. Babu Lal's final note to these statements is: "Were I an anatomist, I would have written more on the subject."

We feel quite sure that with this great mass of postulates, axioms, and propositions, and so on, as a groundwork, we could go on manufacturing more propositions as long as our Government pay lasted, and we fear that this is the author's intention.

Reviews and Notices of Books.

PHYSICAL DIAGNOSIS. By RICHARD C. CABOT, M.D., Assistant Professor of Medicine in Harvard University. Fourth Edition, revised and enlarged: with five plates, and two hundred and forty figures in the text. New York: William Wood and Company, 1909.

The fourth edition of this popular book, which appears four years after the first edition, contains some few amendments and alterations. We need scarcely repeat that we find Dr. Cabot's book one of the most useful of the smaller works on practical diagnosis.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

Typhoid Bacillus Carriers.

After referring to a former paper (*The Journal A. M. A.*, October 16, 1909, p. 1253), in which he had discussed and explained typhoid immunity, W. J. Stone, Toledo, Ohio (*Journal A. M. A.*, November 12), remarks that one of the most interesting problems of typhoid at the present time is that of typhoid carriers. Nearly all these individuals are not seriously inconvenienced themselves by the presence of the infective agent in their system, and this is true of those who have become carriers through contact with the disease—contact carriers—who have not themselves had knowledge of having typhoid. Their tolerance is probably explainable by a natural immunity or by partial immunity from an earlier unrecognized typhoid infection. It is not illogical to assume that their immunity is due to those antitropic substances concerned in active phagocytosis, while lowered antibacterial substances, such as the bacteriolysins and bactericidins, permit the infection to exist for years without eradication of the bacteria. In most instances, typhoid carriers have been discovered in hitherto unexplainable endemic outbreaks. A large number have been women, who have in some way been connected with the preparation of the handling of food products. The time since the original attack has varied in the recorded cases from one to fifty-four years. The difficulty of differentiating carriers of typhoid and of other closely related bacteria, like the colon bacillus, is noted, and Stone mentions two patients under his care at present who had been considered typhoid carriers, but have since shown doubtful symptoms. He thinks, however, that one may differentiate these cases by the local reaction to autogenous vaccines. The colon vaccine is much more toxic than typhoid vaccine, though occasionally we meet with a mild strain. The typhoid-carrier problem is a perplexing one, complicating the conditions, especially in cities. It will be possible, however, for physicians to educate their patients and keep in mind the typhoid attack in connexion with certain symptoms like mild cystitis or dysentery. Segregation of chronic carriers is practically impossible, and a considerable percentage of those attending typhoid cases may themselves become carriers without knowing that they have the disease. Park has estimated that probably one in every 500 adults who have never knowingly had typhoid is a typhoid bacillus-carrier. Urinary and intestinal antisepsis

has not been found of value in treating these cases, but treatment by autogenous and stock bacterial vaccines seems to offer more chance of success. As has been shown by the author's previous paper, the bactericidal substances are increased four or five-fold by inoculations of typhoid vaccine. While a stock vaccine is efficient, it is probably better to use an autogenous one, and Stone reports a case treated in this way with good result. A survey of the literature, he says, citing typhoid carriers treated by bacterial inoculation, though not extensive, seems to warrant the following conclusions: "1. The time element is an important factor in the reaction of susceptibility to inoculations of bacterial vaccines in typhoid carriers. Typhoid carriers injected within a comparatively short time after their infection, will in all probability receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment. 2. 'Contact carriers,' who never to their knowledge have had typhoid, are more susceptible to the inoculations than carriers who have had a definite attack of this disease, and who are in all probability more immune. 3. When the infection has persisted for years, it may be difficult to clear up the condition by bacterial inoculation. The effort should at least be made, since in the somewhat similar condition chronic carriers of apparently non-virulent tubercle bacilli, the bacilli often disappear from the sputum during a course of inoculations of some one of the tubercle products. 4. The immunity manifested by typhoid carriers is in all probability a partial immunity, in the sense that while these individuals are protected against the infection through an augmented phagocytic power held by their body cells, the antibacterial substances, such as the bactericidins and lysins, are lessened to a degree insufficient to exert any destructive power against the infection."

Work of the Council on Pharmacy and Chemistry.

D. L. Edsall, Philadelphia (*Journal A. M. A.*, November 12), describes the work of the Council on Pharmacy and Chemistry, and speaks of its magnitude and of the cordial support given to it by the better part of the profession. The first rules adopted by the Council were found to be not rigid enough, but this was due to the caution which was necessary in the beginning of the undertaking. As soon as it was apparent that the profession demanded the exclusion of preparations of unscientific composition, improperly named or otherwise objectionable, the line was drawn a little stricter, though this necessarily involved much more work. In the beginning the Council devoted itself to the consideration of proprietary drugs alone, but it has gone far beyond this class in the investigation of all substances that are widely used medicinally or have any claims to medical value, but are not in the U. S. P.,

so that it could give an authoritative statement of their composition, uses, etc., which could not be obtained otherwise. The preparation of the publications, "New and Nonofficial Remedies" and "The Propaganda for Reform in Proprietary Medicines," involved a large amount of chemical investigation, and the regular work of the Council from week to week is no child's play. Each preparation as it comes up is carefully considered in all respects, as well as the methods of its advertisement, and if objectionable features appear they are brought to the attention of the manufacturer and an opportunity given him to conform to the rules. A report is first made by an individual member of the Council, then it is referred to a committee, and finally to the whole Council. Investigations that call for much time and labour are often repeatedly gone over by members of the Council in order to furnish the profession with the real facts and to eliminate all sources of error. As a result, excluding the evil preparations, we have a mine of information which could not be obtained elsewhere in the 250-page book, "New and Nonofficial Remedies," which was never before so freely given to the profession. As for the substances which are not so included, the utility of the work is obvious. Edsall says, for example, that within a few hours of his writing this paper, he had to answer three questions which could not have been done before, coming from non-medical professional men regarding certain proprietary articles. Many articles are simply not mentioned in the books, and this means either that they are useless or unscientific or harmful, or that they are exploited by unworthy methods. The Council has been asked why it does not publish a list of all articles rejected, but this it cannot legally do, and really a list of those that will conform to reasonable rules is what is actually required. He notices some criticisms that have been made and answers the objections. Realizing the exigencies of trade, the Council attempts to be as mild as possible in regard to matters that are open to judgement, but it cannot leave the decision of such things entirely to the manufacturer. Two gratifying results of the work are noticed in conclusion: One is the disappearance of the lecturing type of detail man. The other is the building up of healthy skepticism in the profession in place of the former credulity to the statements of interested parties. An interested person cannot usually, even if he would, give fair and judicial information, and the Council looks forward to a time near at hand when it can proceed to put all these matters squarely on a scientific footing and can advance to a point where it can reduce subserviency to the methods of any manufacturer, to commercial expediency, or to trade conditions in any way, down to the lowest point humanly practicable.

Tuberculides.

In a joint paper (*Journal A. M. A.*, November 12), J. S. Leopold, New York, and I. Rosenstern, Berlin, Germany, call attention to a special point in the diagnosis of tuberculosis in children. It has become evident of late years that this disease is more frequent in infancy than was formerly supposed. The various tuberculin reactions have greatly aided in determining this fact, and a positive tuberculin reaction in infancy generally means an active tuberculous coccus. Before we use the tuberculin reaction, however, some suspicion of tuberculosis has usually to exist, and it is a peculiarity of infancy that most of the premonitory signs are lacking and, when the typical symptom-complex appears, the case is practically hopeless. The various skin-lesions are of the greatest value in the diagnosis, namely the so-called actual tuberculous lesion, lupus, scrofuloderma, and tuberculosis varicosa cutis. These are, however, rare in infancy. More common and therefore of greater value are the so-called tuberculides and one class of these plays an especially important rôle in infants. The authors have been giving special attention to these for ten months, using the abundant material of the Kinderasyl of Berlin. The purpose of their paper is to show how valuable this lesion, as yet unrecognized by most observers, is in the diagnosis of tuberculosis in children. The tuberculides consist of slightly raised rounded papules varying in size from a pin head to a millet seed. At first they are of a red colour but later become brownish and show a scale or crust in the centre. When scratched away they leave behind a rounded depression which does not bleed but is dry, as a rule. Their most characteristic points are the absence of any tendency to ulceration, their central depression, their livid brownish colour, and their glistening appearance when the skin is stretched. They may appear anywhere on the skin, but preferably on the arms, the lower back, and especially the extensor surface of the lower limbs. According to the authors' experience there are rarely many present in one case, sometimes not more than four or five, or even less. Hamburger has called attention to the fact that they are easily overlooked on account of their minute size. They were found in asylum children in about 40 per cent. of the cases. They will be less frequent in dispensary practice, as they need watching for constantly, since they soon lose their characteristic appearance. In many hundred non-tuberculous infants they have never been seen by the authors. Their tuberculous character is shown by the fact that in 70 per cent. of the cases tubercle bacilli have been found. A number of case histories are given.

Hydrotherapy.

T. McCRAE, Baltimore (*Journal A. M. A.*, November 5), remarks on the comparative neglect which has been given to the subject of hydrotherapy from biblical times down to the present. One of the important reasons for this is the lack of proper instruction in hydrotherapy in medical teaching. Another may be the excessive claims made by some of its advocates. He discusses this method of treatment under three heads: internal hydrotherapy, local hydrotherapy and general hydrotherapy, entirely apart from any consideration of mineral constituents. In internal hydrotherapy it is of first importance, of course, to see that the water is uncontaminated. The purposes which may be fulfilled by its internal administration are too numerous to go over in detail and certain examples only are chosen. When one considers the proportion of the body weight due to water its need in the economy is evident. It is an important agent in both absorption and assimilation. One of the most marked examples of its benefit is furnished in the acute infections, where the greatest danger lies in toxemia. The kidneys are the great eliminating channels of toxins and there is no proof that their free flushing is injurious unless it may be in acute nephritis. In some of the lesser infections, such as tonsillitis, the effect of active internal hydrotherapy is often marked. In some forms of chronic arthritis apparently of toxic origin and in some nervous diseases the effects of the internal administration of water are marked. The increasing use of saline infusions and enemas is another evidence of the recognition of this principle. The absurdity of giving diuretic drugs without also giving water is admitted. It must be given internally before it can be excreted. Of course, we should consider the condition of the circulation and the kidneys, but in general, these are more liable to be injured by toxins than by hydrotherapy. In typhoid fever, for example, we should try to have the patients pass at least 3,000 c.c., or better, 5,000 c.c. of urine every day. In pneumonia we could hardly reach such amounts; probably 2,000 c.c. would be as much as could be passed. In septicemia, again, we may hope to obtain the larger amounts. Of course, a part is excreted by the skin, and that should be taken into consideration. In certain diseases, like gout, arteriosclerosis or chronic arthritis, we advise the free ingestion of water as a routine measure, having regard always to the state of the circulation. Metabolism is probably helped and the excretion of toxins aided. The influence on the digestive tract should be kept in mind, however, as too much water might be injurious to an atonic stomach. In local hydrotherapy the

circulatory and nervous systems are especially involved and it is sometimes difficult to say which plays the most important part. There are several factors at work. One of the most important is the influence on the blood-flow: another is the effect on osmosis, which is markedly altered in inflamed tissues. In some applications there is an important effect on deeper structures. We are familiar with this in the case of counter-irritants, and the influence of local hydrotherapy is quite as marked. The use of cold compresses to the thorax in bronchitis is mentioned. The effect on local nervous influences is shown by the relief of pain, and it is possible that the sympathetic system is also involved. General hydrotherapy is mainly employed by the use of baths, which are of value in both chronic and acute infections as well as in various nervous disorders. As in the local use of water, both the circulatory and the nervous systems are affected. The use of baths in fevers, and as relief for insomnia, is mentioned as well-recognized and illustrating both these uses. Friction as an adjunct to the bath is also mentioned as stimulating the circulation of the vasomotor system. The value of general hydrotherapy in health is also noted, and McCrae says that it is difficult to say how much the cold morning tub adds to the working ability of the world. Its effect in the prevention of "catching cold" is well known. We all take daily advantage of these two great helps of external therapy in health, and he says that it is a matter for wonder that we are not more willing to give our patients the advantage of them in disease.

Cancer Prophylaxis.

C. H. Mayo, Rochester, Minn. (*Journal A. M. A.*, November 5), says that we must consider the irritation of groups of epithelial cells as the primary origin of cancer. He says it it evident that there exists a precancerous condition. The unproved type, that of prenatal displacement, we are unable to recognize. The post-natal type we recognize at least in tumours of a temporary benign character in their more regular and uniform arrangement of structure and cells, such as skin warts, vesical papillomata, cell inclusions in scars and the results of long-continued irritations to tissues. These growths resemble the embryologic development of cells merely in the power of cell multiplication and in the continuance of type in the metastasis and transplantation of the growth. Bashford shows that, while no race is exempt from cancer, the predilection for the disease in certain countries is more from local irritation than from climate, soil and diet. Why it is not more common following chronic irritation it is impossible to say. It is not necessary to suppose a parasitic origin of the disease to account for its occurrence. In classi-

fying the causes which may render precancerous conditions active we must apparently include nerve fatigue. Cancer of the stomach, bladder and large bowel undoubtedly result from chronic local irritation, and the question arises whether the supposed repeated medical healing of gastric ulcers relieves the tendency to cancer, a large percentage of which develops on ulcers. The modern surgical tendency is to excise ulcers in their precancerous condition, and this should be the rule also with bladder papillomas. He also recommends it in case of hyperplasia of the prostate, even before it has caused distress, on account of the cancerous tendency of the organ. A rapidly growing, hard goitre should be looked on as a menace and early operation advised. Patients with typhoid tumours indicate that an adenoma may cause carcinoma in about one in twenty-five or thirty cases. The irritative effects of tumours of the uterus are also noticed, and, while operation should not be advised in all cases, they should be removed if they cause symptoms, by myomectomy in the young and hysterectomy in the older individual as methods of choice. Tumours of the breast should be watched also with great care, and physicians should not assume the responsibility of delay, but inform the patients of the risk they run. He urges the early performance of the radical operation in early cancer of the breast. As to methods of cure we must admit a wide difference in malignancy, but there is also a wide difference in the resistance of the cases. Serum treatment seems to offer some promise. Patients should be informed in the precancerous stage of their disorder and realize that the danger is not in surgery, but in delayed surgery. It is this last which has caused it to fall into any discredit it has with patients at the present time.

Cancer of the Skin.

L. Loeb, Philadelphia (*Journal A. M. A.*, November 5), analyzes the etiologic factors of skin cancer, external and internal. The external factors of importance are: 1. Light rays, especially the short-wave ones, which are active in the cancer of seamen and of that of old people based on the keratoma, and which are found mainly on parts exposed to light. The X-rays are responsible, of course, for the cancer of X-ray operators. 2. Certain chemical factors are undoubtedly the cause of cancer, such as that of chimney-sweeps and paraffin and coal-tar workers. Arsenic, taken over long periods of time, influences the skin. 3. Certain mechanical irritations, such as heat, friction, etc., are also factors. 4. There may also be mentioned those conditions or organisms that cause disorders, such as lupus, psoriasis and certain scars and ulcers. We have less definite knowledge of the internal conditions. Cancer arising from a congenital pigmented mole indicates that a certain localized and congenital

hereditary condition is to be reckoned with, and there is undoubtedly a susceptibility to the ultraviolet rays of light in some persons that is effective to some extent. Loeb takes up the embryonic theory, but does not consider it sustained by facts. So far as old age is concerned, he also discredits it as a direct factor, as far as the epidermis is concerned. Instead of explaining various skin lesions as due to premature senescence, we should take the view that the senile changes are due to long-continued injurious external influences. While at the present time we should keep in mind the possibility of an etiologic significance of micro-organisms, their connexion with cancer seems to be hardly probable. The effects of irritants, among the external causes, are suggested as corresponding with the chemical activity of internal organs as a factor in cancer growth, by stimulating the overlying epidermis. Loeb says: "Until further experimental investigations shall enable us to discriminate with greater accuracy between the various factors and their mode of action, one must be content to state that, in many cases of cancer long-continued external irritation is of the greatest etiologic significance; that long-continued stimulation of the epidermis may lead to the formation of cancer, but that at present it is not possible to state how much of this stimulation is exerted directly on the epithelial cells through the external agencies, and how much is an indirect effect caused by changes in the organism as a whole or in the underlying connective tissue." But even if these latter changes should prove to be of greater significance, and not merely co-ordinated changes, they may be assumed to stimulate by physiochemical processes the overlying skin. We must beware of too detailed explanations, but may be certain that long-continued irritation causes changes in epithelial proliferation which may be continued indefinitely.

G. E. Armstrong, M.D. "Typhoid Perforations and Perforations of the Gall Bladder." *British Medical Journal*, October 25th.

G. E. Armstrong states that the pathogenesis of typhoid perforation is the coagulation necrosis of the lymphoid tissue opposite the mesenteric attachment, where the blood supply is poor. The problem before the profession is to lower the mortality rate: therefore, the first question is, What are the causes of the high death-rate in typhoid perforation? They are: 1. The condition of the patient at the time of its occurrence. Towards the removal of this cause one can do little, although it adds greatly to the difficulties of recognition. 2. The difficulties in diagnosis. This is almost the whole question at the present time. Once perforation has occurred, one may agree pretty well on the remedy to be applied and on most of the details of carrying that remedy

into effect; but how to make the diagnosis—that is the question above all others in typhoid perforation. This condition is not announced by definite and distinct symptoms. One must clearly appreciate the difference between perforation and peritonitis. The absence of harmony in symptoms is a diagnostic point in favour of perforation. The change for the worse in the patient is often out of all proportion to the abdominal symptoms. Abdominal pain is the danger signal; with this there are tenderness, rigidity, and muscle spasm. One should not conclude that there is no tendereness present without a rectal examination. Later on, when peritonitis has developed, careful inspection may reveal lessened abdominal movement during respiration. If perforation occurs into the free peritoneal cavity the patient cannot recover unless the opening is closed. The only perforations that do not prove fatal unless closed by the surgeon are those occurring in the large bowel and between the layers of the mesentery. It has been demonstrated at the operating table that a small perforation in the small intestine may be temporarily closed by omentum, but that such cases would have recovered if they had been left alone is open to very serious doubt.

J. A. Fordyce, M.D. "Further Observations on the Use of the Ehrlich-Hata Preparation (606) in the Treatment of Syphilis." *New York Medical Journal*, November 12, 1910.

Ehrlich-Hata Preparation.—J. A. Fordyce states that from an attitude of conservatism in the beginning he is becoming more and more impressed with the remarkable action of the drug, especially in the early period of the disease, and in cases which do not respond to mercury and potassium iodide. Decided improvement occurred in cases of leutic endarteritis of the base and of obstinate gummatous ulceration. It is possible with one dose, though that be a minimal one, to eradicate completely the cause of the disease. The following points are also emphasized: (1) Primary lesions should be treated as early as possible, and in the young and vigorous with not less than 0.5 gram intravenously.

In this connexion attention may be called to an article in *Münchener Medizinsche Wochenschrift*, abstracted in *The Medical Record*, upon "The Ehrlich-Hata Remedy and Filariasis," in which Reichmann describes a filarial malady which is, if not unknown to parasitologists, at least uncommon. The case occurred in Jena, and had no exotic element. It was, however, rendered obscure by a recent syphilitic infection, which was perhaps responsible for some of the symptoms, although the patient had received proper and timely treatment (Hg). A positive Wassermann reaction accompanied the filariasis. The parasite appeared

to attack the pleura and kidneys, so that the symptoms were those of both conditions. Increased intrathoracic pressure, anasarca, oliguria, etc., were present. The earlier symptoms, however, could only be likened to intestinal colic, which fact suggested that some general infection had occurred by the intestinal route. As soon as the positive Wassermann reaction was obtained an injection of 606 was given with astonishing success. Before that period a filarial parasite had been cultivated from a pleural puncture fluid. All attempts to find them in the blood and urine failed. The injection of 606 appeared to have destroyed the parasites. As already stated the filaria was not recognized as corresponding to any known species. Hence it may be claimed that it was not the cause of the severe disease. Whether the Ehrlich-Hata remedy possesses filaricidal powers, or whether it acted on a totally unrecognizable remnant of syphilis, the result was most remarkable.

"Roentgen Rays in Dermatology," *Münchener Medizinische Wochenschrift.*—Löwenberg states that with fourteen years' experience one should be able to lay down the indications and contraindications for this resource in this class of cases. Most of the bad effects on record have affected the Roentgen specialist and his assistants, few having affected the patient. In the meantime the specialist has learned to graduate the dosage; and since 1902 Holzknecht has so mastered this difficulty that the use of the rays is relatively safe for operator and patient alike. Others have taken advantage of this improvement so that by to-day the radiometer of Sabourand and Noire has been used by the author and his colleagues 3,000 times with relative safety. This instrument is practically a dosimeter, and through its use one reaches an erythema dose which serves as a maximum. One-half or one-fourth of this dose may often effect the desired result. Recent attempts in the sphere of dosimetry appear to add nothing to the Sabouraud procedure. Many dermatologists continue to use the rays indiscriminately and without regard to dosage, and failures in epilation and in the reduction of tumours are ascribed to the inefficiency of the treatment, while on the other hand burns are common. One must not, however, fail to take notice of the Roentgen idiosyncrasy or supersensitiveness, which would be constantly in apparent evidence without dosimetry. Such an idiosyncrasy has been denied outright by some and pronounced very infrequent by others. The authors have not seen a single case in 3,000 radiations. Yet the profession and public are always fearful of such supersensitiveness. One should know all that is to be learned of the power of the rays. It appears, for example, that young animals may be stunted in growth by a certain amount of radiation, and, indeed, the known inhibitory

action of the rays on cellular activity might justify such a surmise. But apparently human tissues, being more highly organized, are more resistant in these respects. Much depends, naturally, on the right of certain cells to survive. Thus we know that in hypertrichosis the rays are able to destroy certain hair papillæ while sparing the skin at large. Diseases, which by their very nature tend to destroy the hair papillæ, are naturally assisted by this resource, and the old time tedious epilation has been superseded, or if the latter resource is employed it is simple and painless. There is no evidence that the X-rays are actually germicidal—hence in all diseases caused by living organisms parasiticides must be employed. The removal of pronounced hypertrichosis, as in bearded women, does not lie within the province of the rays. When used in maximal doses they tend to cause ugly telangiectasias and scars. The rays seem to be efficacious in highly chronic and localized eczema. In fact, they should supersede all other treatments in certain local varieties of the disease. Psoriasis tends to yield to mild radiation, even in one-quarter maximal dose, but relapses occur with the usual frequency. The same is true of the results of radiation for other skin diseases. It is the record of other means of relief for these conditions. Some improve, some hold their own, and others recede under the treatment. When the authors' summary is digested one finds nothing new. Clearly if Roentgen rays give special results in dermatology, the method of demonstrating them is open to all the objections of any new treatment.

Society Proceedings.

THE MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held Friday evening, November 4th, 1910, Dr. C. F. Martin, President, in the Chair.

The evening was devoted to a consideration of X-rays in medicine and surgery, with lantern slides and illuminated skiagrams. In addition an exhibition of skiagrams was arranged to illustrate various conditions of interest in medicine and surgery.

Dr. G. P. Girdwood opened the discussion:

ON RECENT ADVANCES IN THE DEVELOPMENT OF X-RAYS AS AN AID IN MEDICAL AND SURGICAL DIAGNOSIS AND TREATMENT.

In opening the remarks and discussion on the recent advances made in the development of the Roentgen rays, in aid of medical and surgical

diagnosis and treatment, the variety and extent of advance in the last twelve months is found to be almost bewildering. From all parts come reports of something accomplished in every part of the world, and the great difficulty of putting these advances into any sort of order seems almost impossible, more especially when limited by time.

In the last few years we have made great advances in the speed with which Roentgenographs can be produced. It is now possible to make an exposure and take a picture in about 1-100th of a second. This can only be accomplished by using currents of 250 to 500 volts, with an amperage of 50 to 100 amperes. These are currents requiring the greatest care in handling, and with apparatus most carefully protected, to avoid the risk of premature electrocution on the part of those using them. They also involve a large outlay of money in procuring them, and wear and tear make a costly upkeep. As an example, the Montreal Light Heat and Power Company offered to supply a current of 250 volts and 50 amperes, for experimental purposes for the short space of a week, at a cost of $100; but would not guarantee the amperage, as there would be several elevators and a church organ to drive at any moment, quite unknown, which might reduce the current by more than 50 per cent., in the middle of an exposure perhaps. However, it is possible to overcome these difficulties, as is done elsewhere, but at a cost. The tube makers and the coil makers have been working, the one to make tubes that will stand any current, and the coil maker producing currents that will break down almost any tube. These currents are numerous, and the difficulty is to find one that will do the work satisfactorily. Then, these currents require interrupting, and the number of interrupters to break these high powers has also been a very difficult problem to solve.

These are some of the difficulties X-ray workers have had to overcome, and although there is plenty of room for improvement it is possible to get along fairly well at present.

The introduction of bio-Roentgenography, the taking of living, moving, internal organs, such as the heart, lungs, stomach and intestines, is receiving much attention. In the case of the lungs, it is possible to get the patient to hold his breath long enough to get a good Roentgenograph with sufficient rapidity, and now beautiful specimens of this work are to be seen reproduced in the different journals. The heart movements are so rapid that an average of 60 beats to the minute will give one complete cycle of movement in a second, and therefore, as many pictures as are necessary to portray one cycle, must be made within the second. To obtain five or even six pictures, which would hardly be enough, would require the exposure of six plates all exactly in the same

place, one after the other, within the second. This, of course, must be accomplished by machinery, and so far four pictures are the most that have been taken. In the heart there is sufficient density to produce a picture if it be taken with sufficient speed, but with the hollow organs, the stomach and the intestines, it becomes necessary to put something in them which is impervious to X-rays to fill up the cavity and give a distinct outline. For this purpose some substance, not poisonous, must be used, and what is called the bismuth meal was introduced by Rieder, who employed the subnitrate of bismuth. This, however, was observed occasionally to produce unpleasant symptoms of poisoning, especially in children, and the carbonate was substituted by Groedel, from the use of which no inconvenience has been suffered. It should be impressed that the nitrate not only may be contaminated with salts of copper and lead, but that its administration is almost always accompanied by the formation of methæmoglobin in the blood, which can be detected in the blood by the spectroscope.

The patient should be prepared for this bismuth meal for at least 24 hours before administration, by being well cleared out, and then abstinence from the time the stomach and intestines have resumed their normal condition, until the administration of the meal, which may consist of carbonate of bismuth. Zirconium oxide has been suggested by Hulet, of Rapid City, Michigan. But the fact that the atomic weight of bismuth is 208, and that of zirconium only 90.4, and as the density of shadow cast depends on the atomic weight, half the quantity of bismuth would be sufficient as compared with zirconium oxide.

The bismuth meal, recommended by Dr. Franz Groedel, consists of from 50 to 100 grammes of bismuth carbonate, rubbed up with milk and flavoured with a little raspberry jelly, and made up to 400 grammes with lukewarm broth, equal to about 6.173 grains, a little more than 6-7ths of a pound weight, and measuring only .75 of a pint. It is important to note that the stomach, immediately after its ingestion, may be considerably modified, the gravitation of so large a weight altering its shape. Having taken the meal, fluoroscopic examination may be made at once and watched during the succeeding 22 seconds, the time recorded as being that occupied by one contraction of the stomach. Messrs. Kastle, Reider and Rosenthal have published an account and given reproductions of Roentgenographs taken, 13 in the 22 seconds. Several of these will be shown by lantern slides made therefrom, and tracings made from the original plates will be produced which show the outline of the different phases.

Groedel has produced similar reductions of Roentgenographs, and the

views expressed by the two sets of observers as to the interpretation of their observations have led to two different views with regard to the contraction of the stomach, which must be left to the profession to settle after more experience.

Next among the many advances may be mentioned the Roentgenography of the hypophysis cerebri in its association with acromegaly, cretinism, achondroplasia, and rickets. This has lately been worked out by Dr. F. Jaugeas, who has produced four reductions of radiographs, lantern slides of which will be thrown on the screen, as also a slide of a normal skull showing the position of the sella turcica, to obtain a good picture of which it is best to adjust the patient's head so that the plate on which the head rests shall be parallel with the median plane of the skull, and that the vertical ray from the focus tube shall fall as nearly as possible through a spot midway between the external auditory meatus and the external angle of the eye. This was the position in which the normal skull exhibited was taken.

In June last, Dr. Leopold Freund, writing on Roentgen ray treatment of goitre, summing up his experience and that of others, noted that in all cases of goitre there is a beneficial effect in reducing the size and relieving the symptoms, but that permanent cure is seldom met with.

Perhaps the most important addition to our knowledge of the treatment of cases by Roentgen rays is a communication by Sir J. J. Thompson on the secondary rays emitted by different metals when stimulated by the Roentgen rays. That the Roentgen rays are incapable of reflection or refraction by any known means is admitted by all observers, but when a ray falls on a plate of metal the metal starts secondary rays emanating from the point so struck,—this has been long admitted, but what Sir J. J. Thompson, and Dr. Barkla, a pupil of Professor Thompson, and now professor in King's College, have discovered is, that these secondary rays are always of one particular sort for every metal struck, and not necessarily metallic substance, but that all substances when struck by X-rays produce secondary rays from the point struck, and that these secondary rays are always of the same character, no matter from what source the X-rays are derived. Sir J. J. Thompson says: If we expose a piece of iron to Roentgen rays the iron gives out one particular kind—a perfectly definite kind—of Roentgen radiation, it does not matter what the quality of the rays that strike it. If we take another metal, say copper, we find that it gives out quite a definite kind of radiation and quite different from that given out by iron. Silver, also, when struck emits a certain definite kind of radiation different from the copper or iron, it does not matter what the nature of the incident ray in any of these cases.

By this means, then, we are able to obtain rays of certain definite character, and if it is desirable to make use of these rays in any special part of the body, we shall be able to do so by inserting a piece of the metal which will produce X-rays we require, and irradiating that piece of metal *in situ* by highly penetrative rays, which will pass through the superficial layers of flesh. Thus we hope to be able to know what kind of rays we wish to make use of and apply them on the spot where they are wanted.

The advances, then, in the application of this branch of medicine may be found in:

The recent examination of the mastoid region.

The aid of Roentgen rays in the early diagnosis of pulmonary tuberculosis.

Post operation radiation in cancer.

Diagnosis of achondroplesia.

Stereoscopic radiography as a diagnostic aid in pulmonary tuberculosis.

Roentgen ray diagnosis in diseases of bones.

The use of bismuth paste injected into sinuses and other cavities, and then the taking of a radiograph should be of help to the surgeon in diagnosing the case under treatment.

Professor Bela Alexander introduced a process by which an ordinary skiagraph may be made to represent a cast in plaster, giving more depth to the picture and bringing out detail and giving a certain amount of solidity to the picture.

LANTERN SLIDES EXHIBITED BY DR. GIRDWOOD.

1. Fractured left humerus in a child four days old.

2. Same in splint.

3. Child, one year old, born without legs, and arms only just to above elbow joint.

4. Head of same child showing teeth coming up.

5. View of apparatus for taking Bioroentgenographs.

6. Outlines traced of 13 stomach views taken in 22 seconds by Kastle, Rieder and Rosenthall, archives of Roentgen rays.

7. Composite picture of tracings of normal stomach.

8. Twelve tracings from a stomach with cancer of pylorus, by same authors.

9. Composite picture of 8 from archives of Roentgen rays.

10. Four stomachs after bismuth meal, from which above tracings were made.

11. Four more pictures of same showing the changes.

12 and 13. Stomach and large intestine after the introduction of car-

bonate of bismuth after Groedel, reproduced from the archives of Roentgen rays.

14. Reduction from skiagraph of skull showing the sella turcica.

15. Reduction of four Roentgenographs by Jaugeas.

16. Hypophysis cerebri from the archives of Roentgen rays.

17. Fracture of tibia and fibula that had been wired.

18. Fracture of lower end of radius with impaction.

19. Tubercular ulceration of os calcis by Bela Alexander's plan of plastorelieve photographs, showing erosion of bone.

20. Case of arthrodesis of ankle joint for club foot.

Dr. H. S. Birkett exhibited skiagrams showing the practical application of radiography in suppurative diseases of the accessory sinuses of the nose and of the mastoid.

Dr. W. Wilkins gave a demonstration of some skiagrams in the practice of surgery.

Dr. R. P. Campbell: The use of X-rays in calculous and other diseases of the kidneys and bladder.

Intermission for exhibition of plates.

Dr. Hamilton: The fluoroscopic diagnosis of pulmonary conditions.

Dr. Martin: The fluoroscopic diagnosis of cardio-vascular conditions.

Dr. Elder: The use and abuse of the X-rays in fractures.

Dr. von Eberts: The application of X-rays to intestinal surgery.

The application of Roentgen rays in the diagnosis of the surgical affections of the gastro-intestinal tract is daily becoming more frequent. The work of Rieder and Holzknecht established a basis for subsequent investigation. These authors were followed by Fincka, who within the present year has made an extensive report upon his work in von Brunn's clinic at Tübingen. By means of bismuth meal, this investigator has done much to render possible the diagnosis of such gastric conditions as dislocation of the stomach, ulcer, gastrectasis and gastroptosis, adhesions, hour glass deformities, and malignant tumours, as well as to establish a normal standard with regard to size, position and peristaltic activity.

The following series of plates may be shown in illustration. These were taken in the case of a young man presenting indefinite abdominal symptoms, which were thought to be due to gastric dilatation and defective motility. Bismuth meal was given at 10.45 a.m., and the first exposure was 15 minutes later at 11 a.m., with the patient in the prone position. The second exposure at 11.15, in the standing position; the third at 1 p.m., in the prone position, and the fourth at 4 p.m., also in the prone position. The greater curvature was found to be much lower than

was suspected. It would appear, however, from the other plates, that the stomach was capable of emptying itself within a normal period.

The technique applicable to the above investigations may be also applied in the diagnosis of such conditions of the large bowel as tumours, stricture, tuberculous or actinomycotic infiltration, fistulæ, and foreign bodies. In illustration, I would beg leave to present a plate in which the shadow of the large bowel from the rectum to the ileocæcal valve is shown in extraordinary detail. In this individual a large fecal fistula, communicating with the descending colon, had persisted after an anastomosis between the transverse colon and sigmoid had presumably been effected. By means of this skiagram it was possible to determine definitely before opening the abdomen that the entero-enterostomy was placed at a point above the level of the fistula.

The fourth regular meeting of the Society was held November 18th, 1910, Dr. C. F. Martin, President, in the Chair.

EXHIBITS.

1. New series of skiagrams.
2. An electrical opthalmoscope, by A. W. Morrison.
3. Ehrlich's "606." The new synthetic drug thought to cure syphilis after one injection.
4. The newer publications in medicine and surgery.

LIVING CASES.

1. Extirpation of the larynx, by Dr. R. H. Craig. Discussed by Dr. H. S. Birkett.
2. Double radical frontal sinus and antrum operation, by Dr. E. Hamilton White. Discussed by Dr. H. S. Birkett.

PATHOLOGICAL SPECIMENS.

Dr. O. C. Gruner, of the Royal Victoria Hospital, exhibited the following specimens:

1. *Fungating Cancer of Stomach.*—From a case with greatly enlarged liver, partial thrombosis of the portal vein, with tumour growth into it; secondaries in lumbar glands and adrenals.

Note a large mass along the lesser curvature covering two-thirds of the anterior wall. The growth is cauliflower like and densely infiltrates the wall of the stomach. One oval mass is ulcerated in the middle and its edges thick around it and very prominent. Adjoining it are three small nodules not ulcerated. A mass of enlarged glands is seen along the lesser curvature. They are hæmorrhagic as well as infiltrated with growth. There was much blood in the intestine. The growths in the

liver are peculiar on account of their vascularity and their ill defined nature.

2. *Primary Malignant Disease of Liver with Cirrhosis.*—This is a case in which there was no growth anywhere else in the body. A striking condition was the blocking of the portal vein by a solid mass of tissue extending from one side of the liver to the other causing liver necroses. The hepatic veins and inferior vena cava were not affected.

Other lesions were—atrophy of the heart, hæmorrhage into stomach and intestine, ascites, atheroma of the coronary and splenic arteries.

3. *Head of Tænia Mediocanellata.* (*Beef Tape Worm.*)

4. *Trichinæ in Muscle.*

5. *Tuberculous Prostate: Disseminated Tubercle of Adrenals.*—From a case of general tuberculosis secondary to old tubercle of the lungs.

The left lobe of the prostate showed abundance of cheesy material, and the corresponding vesicula and testis was full of cheesy pus. There was no disease in the other side of the prostate. It was rather remarkable that the urethral membrane and bladder were not infected. The adrenals were studded with tubercles and the structure of the organs was obscure; the skin showed pigmentation.

6. *Calcified Plate in Mitral Valve.*—From a case of cancer of the sigmoid.

The mitral valve left a very small aperture barely admitting two fingers. The edges were very thick and hard and a calcified nodule .7 cm. in diameter was present at the junction of the two cusps in front. At the posterior papillary muscle the chordæ were obliterated and the valve was tightly bound down to the muscle. At that spot there was a calcified plate 1 cm. square, with a concave upper surface. There is no record of symptoms produced by this lesion.

7. *Gangrenous Lungs.*—From a case of puerperal septicæmia, with septic thrombosis of the pelvic veins, iliac veins and inferior vena cava.

The case was one in which there had been incomplete curetting after parturition; and the upper end of the uterine cavity had still some purulent looking material with thrombosis in the veins of its wall. The disease in the lungs is evidently the result of thrombosis and produced a striking appearance, the lower lobe of each lung being converted into a large abscess cavity.

DEMONSTRATIONS ON RADIOGRAPHY.

1. Skiagrams of arthritic conditions and errors in their interpretation, by Dr. W. G. Turner.

2. The use of X-rays in some orthopœdic conditions, by Dr. A. Mackenzie Forbes.

3. The value of X-ray examination of the stomach by means of the bismuth meal, by Dr. F. A. Scrimger.

Dr. F. T. Tooke presented two slides, (1) showing the fœtal orbit in its relation to the accessory nasal sinuses (Guinea pig): (2) the fœtal orbit in its relation to the turbinated bones (human).

PAPER.

The paper of the evening was read by Dr. D. A. Shirres, on Acute Epidemic Poliomyelitis. The following is a synopsis:

1. A brief report of the epidemic that occurred in Montreal.

2. Description of clinical cases resembling,—multiple neuritis, ascending myelitis, transverse myelitis, gastro-intestinal type of influenza (abortive form), pontine disease, Meniere's disease, encephalitis, ataxia (cerebellar disease), meningitis, and mental disease.

3. Flexner's recent findings as to etiology and prevention.

4. Treatment in the early and late stages.

Discussion by Dr. Russell on the Pathology; Dr. A. A. Robertson on the Etiology; Dr. William Winfrey on the Medical Treatment; Dr. N. Viner on the Possible Sources of Origin: Dr. Mackenzie Forbes on the Surgical Treatment.

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